Volume 89 Number 8

STEEL

*For forty-eight years*—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

WHEN the AKRON, queen of dirigibles, shortly preens her wings for a skyward flight her slender, stately hull will glisten in the sun like stainless steel. To the steel-wise, this illusion will be but a promise of the encouragingly-large amount of steel utilized in her construction, considering that maximum strength with minimum weight was the test to which all materials were put. A summary (Page 19) of the steel employed in building and housing the AKRON reveals fuel lines, service tanks, oil system, valves, outrigger struts and other vital parts of stainless steel, wire of both carbon and alloy steel, various fittings of ingot iron, helium cars and tanks of alloy steel, plus 7400 tons of shapes and 700 tons of bars in the giant dock.

## Where Utility May Be Only Skin Deep

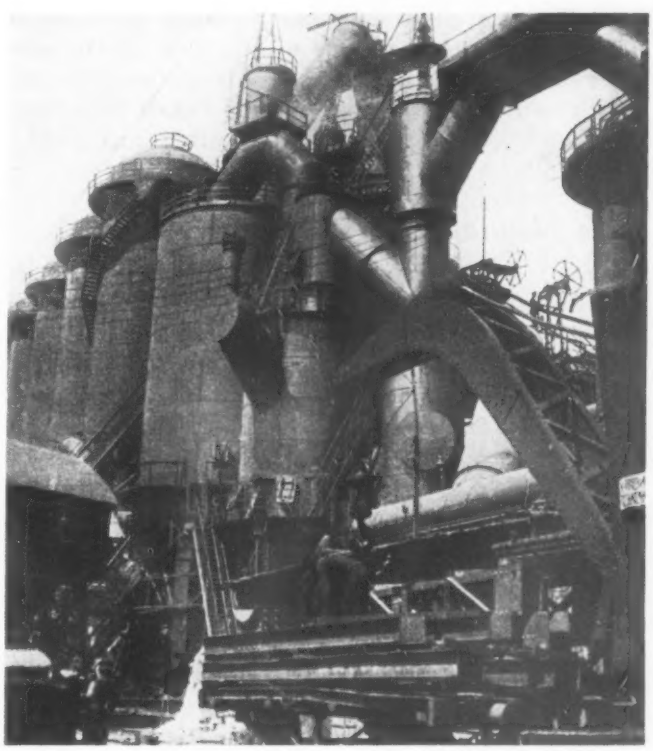
For the national defense, cost obviously is a secondary consideration, but in the commercial world the initial outlay more often than long-run economy may be the lodestar. For all its remarkable expansion, the market for stainless steel undoubtedly has been circumscribed by its comparatively high first cost. And the sequel has been diligent search for a material offering the surface advantages of stainless steel, yet having a base or core of mild steel to average down the cost. One producer, working along these lines, has developed a composite metal (Page 34) in which a veneer of chrome-nickel steel is weld-bonded to a mild steel slab, then rolled to form an integral plate or sheet.

## Again, Interior vs. Lakefront

Even in torrid August the administration at Washington is permitted no respite from the vexing problems of freight rates and unemployment. . . . Interior steel producing districts, of which Pittsburgh and Youngstown are typical, are adamant against the proposed 15 per cent increase in freight charges, pointing out (Page 17) to the interstate commerce commission that they would pay twice—on coal and on iron ore—while the lakefront furnaces would pay but once, on coal. And, it so happens, United States Steel and Bethlehem predominate on the lakefront while most interior producers are independents. . . . If the increase must come, the chemical industry (Page 18) would apply it as a surcharge, easily removable when conditions improve. . . . Apart from the rate problems, the commerce commission is beginning (Page 18) to investigate the efficiency of the railroads.

## Frankness in Unemployment Arrives

Typifying the growing frankness at Washington concerning the urgency of unemployment, the administration is promising (Page 18) a



In the "Pittsburgh" of old Russia: Here in the Ukraine, south of Moscow, where ore and coal abound, Russians have rebuilt the Petrovsky works

*Photo, Lincoln Electric Co., Cleveland*

Teamwork: Two operators simultaneously arc welding a 26-inch gas line for Southern Fuel Co., from Kettleman Hills to Los Angeles, Calif.

concrete program within a month. . . . Meanwhile, the senate will not conduct unemployment hearings planned (Page 69) for this month, although one senator is urging a special session. . . . A machine tool manufacturer senses the approach of the 40-hour work week (Page 18) as one means of soaking up the surplus of labor. . . . Like the boy at the dike, the American Federation of Labor takes its stand, "unflinchingly," (Page 18) against any reductions in wages.

## Urge Nationalization, as Coal Wilts

When the discussion of unemployment lags in the next session of congress coal threatens to rear its inky head. . . . With an air of resignation, bituminous coal operators have stated their willingness to accept federal control (Page 18); with an air of battle Senator Brookhart, whose middle name is Wildman, declares there might as well be free talk of nationalization. . . . One reason for coal's straits is the inroad of other fuels, notably gas and oil. According to one authority (Page 19), these competitors in 1929 took 125,000,000 tons of business from coal.

## Would 'Thrustor' End the Depression?

When a furnace door is to be opened or a shear stopped, a new automatic device termed "thrustor" (Page 44) does it in many modern steel mills. . . . Something akin to this industrial robot is being employed on shipments of lake iron ore. Determined to open the season of 1932 with only normal stocks on lower lake docks, steelworks (Page 21) have curtailed releases of ore, 13 more freighters have been tied down, 1931 has been scaled down to a 25,000,000-ton ore year. . . . Over two decades the lake ore trade has closely attuned its operations to general business activity (Page 21), the ups and downs of seasonal movement of ore coinciding with the swings of business.

## Amber, Not Red, Against Auto Output

Direst of forecasts were made for August production of automobiles, yet with the month half gone the industry has assembled almost 100,000 units, hence sentiment at Detroit is looking up. Rumors of many fall model changes, of more manufacturers bolting the program of withholding new lines until the 1932 shows, are rife. Other news (Page 24) of the automobile industry is: Plymouth output, though pushed, is third to Chevrolet and Ford; Hudson-Essex has an improved electrical system; the Germans are using a magnesium alloy, lighter even than aluminum. . . . Russia, on the basis of the first six months of 1931, is claiming (Page 61) second place in world production of tractors.

## Market Gains Slight, but Steady

If August comes, can the fall upturn in steel be far behind? Not if this week's market developments are a safe guide. . . . For the second consecutive week steelmaking operations (Page 57) have expanded. . . . Inquiry for structural steel is broad (Page 62) and the more heartening because for small lots, well distributed. . . . The railroads are a little more interested (Page 61) in track material and rolling stock. . . . Inquiry for machine tools is heavier, the wave of renewed interest (Page 84) noticeably passing from East to West. . . . Some basis for encouragement arises in the observations (Page 27) of a well-known economist that wear, rust and obsolescence are consuming steel faster than the mills are producing it.

## Causes of Steel Failure Are Elusive

Despite advances in metallography and the X-ray, causes of failure of steel sometimes escape detection. Some factors (Page 31) to which sudden, distressing breaks may be charged are: Notch fatigue due to massed inclusions of sulphides, silicates and oxides, corrosion fatigue, insufficient heat treatment; rough tool marks. . . . Preheating of rolls in hot sheet and tin plate mills is accomplished economically by an induction roll heater (Page 40). Rolls are covered with asbestos paper, the heater lowered over them and in 12 hours, to avoid steep temperature gradients, the rolls are ready for use.

# Interior Mills Claim Unequal Burden in Freight Rate Rise

WASHINGTON — Representatives of the Pittsburgh and Youngstown districts, appearing before the interstate commerce commission to register opposition to the 15 per cent increase in freight rates sought by the railroads, argued that so-called interior pig iron and steel producers would be hit twice by the proposed increase—on coal and on iron ore—while lakefront producers would pay additionally only on coal, and hence the competitive differential in favor of the lakefront producers would be widened.

F. A. Ogden, general freight agent of the Jones & Laughlin Steel Corp., Pittsburgh, and J. V. McMahon, traffic manager for the Youngstown (O.) chamber of commerce, were the chief witnesses Aug. 17 when the commerce commission heard iron and steel opposition to the proposed rate advance. The opposition hearings in Washington were opened Aug. 10 and are to be completed by Aug. 21.

### Ogden Compares Payments

The Jones & Laughlin corporation, with plants in the Pittsburgh district, uses about 3,500,000 tons of Lake Superior iron ore in a normal season, all of which takes a rail haul from Lake Erie ports to Pittsburgh, Mr. Ogden explained. He said:

"Iron ore rates should be left without increase at this time, because the rates themselves already pay the carriers more than a reasonable return for the service performed on competing companies.

"The proposed increase on ore would work to the advantage of lakefront furnaces at Chicago, Cleveland, and other lower lake ports, including the United States Steel Corp. plants at Gary, Cleveland and Lorain, and the Bethlehem Steel Corp. plants at Buffalo. These companies are not here protesting the increase. With no change in the boat rates, but with the upper rail haul and lower rail haul both increased, the interior furnaces such as ours will pay an increase on the two rail rates, and the lakefront only on one.

"The proposed increase of 15 per cent added to the present $1.23 rate on ore from Lake Erie ports to Pittsburgh means an increase of almost 20 cents per ton on iron ore. Since it takes about two tons of ore to produce a ton of metal, the proposed increase would add 40 cents per ton to the steel manufacturing cost of Jones & Laughlin at Pittsburgh. This is an increase over and above what would fall on the lakefront furnaces.

"Our annual consumption is in the neighborhood of 3,500,000 tons, meaning an increase of $616,000 in the manufacturing cost of Jones & Laughlin at Pittsburgh over and above what would be incurred by any lakefront furnaces.

"It also makes an excess of that amount over and above increase in manufacturing cost at the Steel corporation plants in the Pittsburgh district because, as I have already said, the increased ore rate would accrue to the Bessemer & Lake Erie, a subsidiary of the Steel corporation.

"Our understanding of the foundation for the carrier increase is revenue needed. I submit that as to iron ore traffic, the operating results of roads that handle iron ore traffic chiefly and almost exclusively demonstrate that the iron ore rates at present pay a tremendously high return.

"In these circumstances the proposed increase looks to the layman like an absolute out and out tax and is in no sense a matter of reasonable pay for service. Add to this the inequality of that tax, falling more heavily on the interior furnaces, and we can say confidently that Pennsylvania, which is tantamount to saying the Pittsburgh district, will be pushed further down the scale as a steel producer and the carriers serving it will continue to transport less iron ore from the lower lake ports to the inland furnaces."

In addition to opposing the increased rates on iron ore Mr. Ogden also spoke against the increase in the rates on manufactured iron and steel. He stated that his corporation "now pays substantially $1,000,000 per year in equalization in order to sell in competitive markets against producers that have lower rates, that is to say, an increase in the rate on the product is not paid in its entirety by the final consumer.

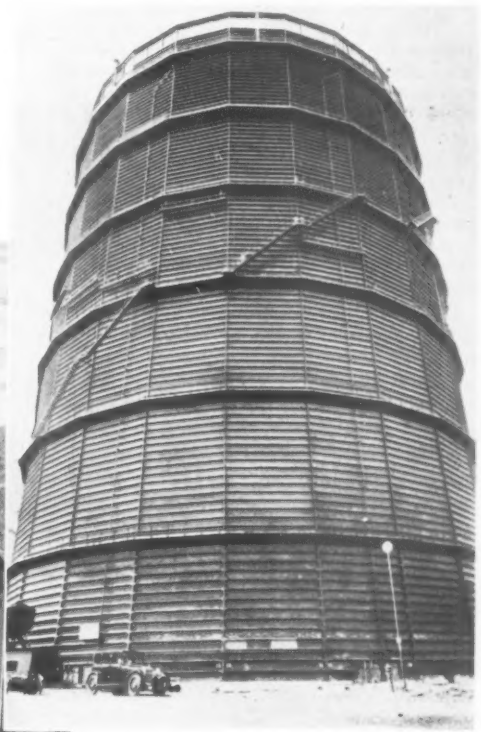
"This equalization on outbound finished steel, is one more element to be added to the difficulties under which we are working. As I have already stated this $1,000,000 cost to Jones & Laughlin would be increased by 15 per cent as a minimum if the rates are increased 15 per cent."

### "Not a Matter of Rates"

In concluding his testimony, Mr. Ogden stated that "the condition confronting the railroads is not a matter of freight rates but the lack of business, which is the same as confronts all industries from the farmer up. To further penalize the industries for the benefit of the railroads, is to divert more and more the business, how little it may be, to trucks, and other forms of transportation and to greatly hamper all the industries. If the industries are not helped there will be very little business for the railroads, or any other means of transportation and advanced freight rates will be of no avail. It would in the end be better for all to reduce freight rates as has been done in the past in times of depression."

Mr. McMahon, of the Youngstown chamber of commerce, also appearing against any increases and taking up especially iron ore, steel and various raw materials going into steel man-

*This gas tank in Vienna, Austria, 328 feet high, 722 feet in circumference, is said to be the largest of its kind in Europe. Incidentally, it was given a priming coat and two top coats of paint, by spraying, in 35 days*



*Photos, DeVilbiss Mfg. Co., Toledo, O.*

ufacture, called the commission's attention to the fact that until recently the Youngstown district was second only to the Pittsburgh district in the production of iron and steel but has now been replaced by the Chicago district. In the production of iron and steel many commodities, he said, are used in large quantities, the most important of which are coal, ore, limestone and coke. Said Mr. McMahon:

"It is almost impossible for the steel industries and others in the Youngstown district to meet the competition of similar industries located on the rivers or Great Lakes. Any increase in the present freight rates and charges will aggravate this situation.

"In our opinion, it will increase the cost of production in the Youngstown district by greater amounts than at competitors' plants located on the rivers and Great Lakes because the increase will not apply to the water transportation which they enjoy.

"Because coal is used in such large quantities and comprises such a large portion of the cost of producing steel, the burden of cost to the Youngstown district due to its all rail transportation on such coal as compared with the cheaper river transportation to the Pittsburgh district is so great that the Youngstown district cannot longer compete successfully with the Pittsburgh district in the manufacture of iron and steel and its products.

**Increase Exceeds River Costs**

"With this situation in mind, some idea of the effect of the proposed increase in coal freight rates can be had when it is understood that the proposed increase in rates of 20 cents per ton to the Youngstown district equals or exceeds the total river transportation costs per ton on coal to competitors located on the Ohio, Monongahela and Allegheny rivers.

"While we do not have positive information as to the cost of transporting coal from river mines in steel companies' privately owned barges to steel industries located on the rivers our studies develop that this cost, in most instances, does not exceed 20 cents per ton.

"The Youngstown district as well as competing districts, consume large quantities of iron ores shipped from the Minnesota and Michigan iron ore district."

During the past week the sand and gravel, glass and chemical, paper and pulp, farming interests and others have appeared before the commission here almost entirely in opposition to the desired increase.

Many witnesses declared that increased freight rates would cause losses to the railroads instead of gains and would further divert traffic to the highways and waterways.

The Manufacturing Chemists association asked that any increase in rates which might be allowed be in the nature of a "surcharge" which could be terminated on short notice when business conditions right themselves. This association asked that any new rates be made effective Jan. 1 because of long term contracts which the chemists have, including freight charges, which they would not be able to pass along to the purchasers.

*American engineers assisting Russians. This illustration from the soviet's economic bulletin is captioned: "Engineers of the Freyn Engineering Co., Chicago, planning the power station for the Nizhni Tagil steel plant in the Urals. Messrs. Leitz, Menke, Shaw, Fox and Kronk"*

## Commission to Investigate Railroad Efficiency

Washington—Entirely separate from the pending action on an advance in railroad freight rates, the interstate commerce commission is inaugurating an investigation into the efficiency of railroad management. Questionnaires relating to prices paid for railroad fuel and construction of private sidings for shippers have been mailed. The commission will go into the matter of lighterage, terminal operations, reconsignment and similar services, to determine whether the railroads are absorbing too many charges. Hearings will be held in Boston Sept. 15-19, New York Sept. 22-30, Pittsburgh Oct. 5-17, Buffalo Oct. 20-23, Detroit Oct. 26-30, Cincinnati Nov. 2-7, and Chicago, Nov. 10-24.

## Ask I.C.C. Rise in Ohio

Columbus, O.—Six of the principal railroads operating in Ohio petitioned the Ohio public utilities commission, Aug. 14, for permission to increase intrastate freight rates whatever percentage the interstate commerce commission allows on interstate rates growing out of the current hearing on the railroad's request for a 15 per cent advance. The rise in Ohio intrastate rates would be effective the same date interstate rates are revised. The railroads participating in this request are the New York Central, Pennsylvania, Baltimore & Ohio, Erie, Nickel Plate and Wheeling & Lake Erie.

## Sees 40-Hour Week Near

Maintained wage rates and a shorter work week were urged by Ralph E. Flanders, of the Jones & Lamson Machine Co., Springfield, Vt., in addressing the conference of smaller industries conducted last week at Silver Bay, N. Y.

There are many reasons for believing the country is ready for the 40-hour work week, said Mr. Flanders. The present period of depression should be utilized for improving production and increasing the efficiency of management, he declared.

## Federation "Unflinching" In Opposing Wage Cuts

Washington—While the executive council of the American Federation of Labor, meeting in Atlantic City, N. J., last week, issued a formal statement declaring its "unflinching purpose" to oppose wage reductions, Senator Simeon D. Fess, Ohio, chairman of the Republican national committee, was reassuring the country as to government purposes and plans for the coming winter.

President Hoover, according to Senator Fess, has all agencies of the government at work making a survey, and "within a month" will know definitely what will be required. The President, Senator Fess declared, will have "a concrete program" when congress meets. He reiterated that the government stands firmly opposed to the dole, but that it may be compelled to contribute relief funds where other means fail.

## Congress To Grapple with Coal Industry's Problems

Washington—That legislation will be proposed in the coming congress looking to a solution of the coal mining industry's problems now seems certain. enator Smith W. Brookhart, of Iowa, in a letter to the secretary of the Miners' Relief Fund of the Socialist Party, Pittsburgh, stated that he will ask the senate

to double the $50,000,000 federal appropriation for direct relief for sufferers from the general industrial depression which he proposed in the last congress.

Commenting on the report that bituminous coal mine operators will ask the government for regulation of the coal industry Senator Brookhart stated the government might just as well take up the question of nationalization. The formation of a "coal bloc" in congress is anticipated, with members indicating they will sponsor legislation.

A plan for state regulation, under a virtual dictatorship, is proposed in West Virginia, the officials of the city of Wheeling seeking to interest the states of West Virginia and Ohio. Coal production would be restricted to provide a fair return on capital and fair wage rates for miners.

## Big Coal Market Lost

One hundred and twenty-five million tons of national power coal markets were lost in 1929 by coal producers to natural gas and oil offered at "suicidal prices," declares Newell G. Alford, consulting engineer, Pittsburgh, in the *Mining Congress Journal*. This was 18 per cent of the 1929 total potential coal production. An indirect loss of serious proportions through the decrease in railroad freight is pointed out by Mr. Alford.

## Books 1500 Car Doors

Youngstown, O.—Youngstown Steel Door Co. has received orders for 1500 steel railroad car doors in the past 60 days.

# Steel Plays Important Role in Airship Industry

CHRISTENED Aug. 8, completed except for finishing touches and scheduled for an early trial trip, the navy's new rigid airship U. S. S. AKRON represents America's first ambitious project in the construction of lighter-than-air craft. In building this largest leviathan of the air the Goodyear-Zeppelin Corp. brought into play more extensive resources in plant, organization and experience than had been available for the few ships built previously in this country.

Steel plays a more important role in airship construction, operation and maintenance than is generally realized. Before the first ring of the ZRS-4, now known as the U. S. S. AKRON, was laid, the steel industry had furnished 7400 tons of structural steel and 700 tons of reinforcing steel for the Goodyear-Zeppelin dock and shops. While the ship was under construction a portable mooring mast was built, underground tanks with a capacity of 1,000,000 cubic feet of helium were installed, six special cars of alloy steel for transporting helium were built, and spherical drums of welded, alloy steel for storing helium were developed and fabricated. The steel in these various auxiliaries totals more than 1000 tons.

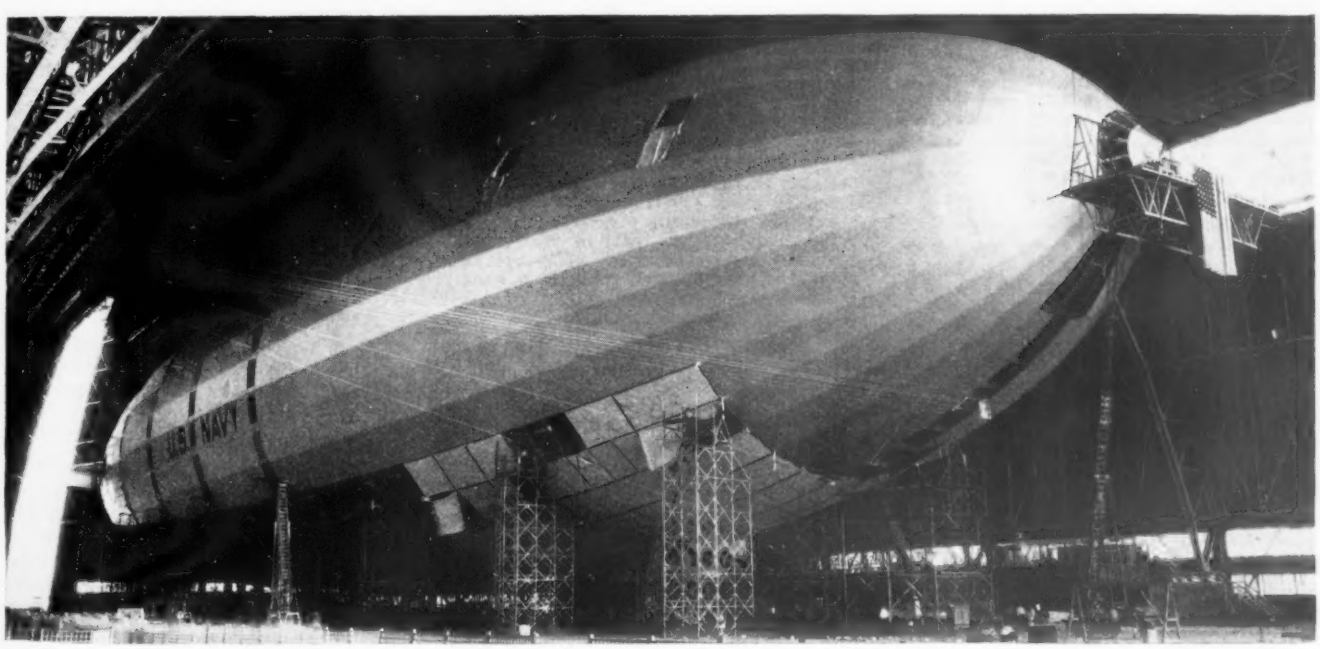
Because the frame of duralumin is such a prominent feature in a rigid airship, the important role of steel in the ship itself sometimes is overlooked. In the majority of large dirigibles the duralumin frame is strengthened by bracing of alloy steel wire. Stainless steel was used more extensively in the British R-101 than in any other large rigid craft ever built. Since the lifting power of an airship multiplies so rapidly with increase in linear dimensions it is not improbable that stainless steel may compete with aluminum alloys for structural members in giant craft of the future.

In the U. S. S. AKRON stainless steel is employed for fuel lines, oil system, exhaust manifolds, oil storage and service tanks, gas tank fittings, outrigger struts, bolt clip assemblies and for various valves. Ingot iron is used for certain fittings and parts and carbon and alloy steel wire is employed throughout the ship.

Each of the eight engines, built in Germany, drive 2-bladed wooden propellers through speed reduction sets. The propellers can be swung through a 90-degree arc and since the engines are reversible, give the ship a vertical thrust up or down.

When the complete list of those who furnished material for the U. S. S. AKRON is available, the role of steel will be more clearly defined. Thus far attention has been focused upon the Aluminum Co. of America for its improved duralumin in the hull, Republic Steel Corp. for its Enduro

(*Concluded on Page* 61)




*Although only a few tons of steel were used in the U. S. S.*AKRON, *about* 10,000 *tons were required for dock, shops, helium tanks, masts, etc. and nearly an equal amount will be required for operating facilities*

# Sheet Output Gains in July; Most Statistics Show Losses

SHEET sales in July, 144,461 net tons, reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, averaged 4661 tons, a reduction of 14 per cent from June. July production totaled 174,890 tons, the daily average being 5641 tons, an increase of 15 per cent. Shipments amounted to 178,460 tons, the daily average of 5757 tons showing a rise of 11 per cent.

Unfilled tonnage as of Aug. 1 was 203,358 tons, compared with 304,107 tons July 1. Finished stock on hand awaiting shipment Aug. 1 was approximately 83,006 tons, and the amount in stock, unsold, 77,953 tons. Total sheet capacity for the United States for July was approximately 558,850 tons, and the capacity to which the foregoing figures are related is 377,840 tons.

## Third Monthly Loss Set In Galvanized Production

At the low for 1931, June production of galvanized pails and tubs was 92,460 dozens. Shipments were likewise affected. Production in the other ware class was the lowest since January. Department of commerce figures follow:

**In Dozens**

| | Pails and Tubs | | Other Ware |
|---|---|---|---|
| | Production | Shipments | Production |
| 1930 | | | |
| June | 89,982 | 82,956 | 40,646 |
| 6 mo. | 735,147 | 731,190 | 236,175 |
| July | 91,879 | 104,096 | 42,056 |
| Aug. | 103,050 | 103,354 | 46,730 |
| Sept. | 103,177 | 116,875 | 38,218 |
| Oct. | 130,906 | 115,185 | 40,084 |
| Nov. | 60,798 | 68,330 | 16,061 |
| Dec. | 87,140 | 68,898 | 21,657 |
| Year | 1,309,097 | 1,307,928 | 440,981 |
| 1931 | | | |
| Jan. | 103,677 | 133,977 | 23,716 |
| Feb. | 132,781 | 120,723 | 34,347 |
| March | 146,438 | 144,637 | 31,542 |
| April | 143,258 | 140,080 | 34,929 |
| May | 121,413 | 122,072 | 28,390 |
| June | 92,460 | 90,747 | 26,304 |
| 6 mo. | 740,867 | 756,212 | 179,228 |

## RailroadLocomotiveOrders, Shipments Off in July

Due to declines in demand for domestic steam locomotives, July's total unfilled orders for railroad locomotives dropped from the May level. Shipments were at the slowest pace since March, so the principal locomotive manufacturers report to the department of commerce. Monthly tables follow:

| | Shipments | | Unfilled Orders | |
|---|---|---|---|---|
| 1930 | Domestic | Foreign | Domestic | Foreign |
| July | 55 | 1 | 284 | 7 |
| 7 mo. | 464 | 15 | ..... | ..... |
| Aug. | 73 | 4 | 229 | 5 |
| Sept. | 65 | ..... | 169 | 5 |
| Oct. | 50 | ..... | 127 | 5 |
| Nov. | 43 | ..... | 88 | 5 |
| Dec. | 44 | 5 | 104 | ..... |
| Year | 739 | 24 | ..... | ..... |
| 1931 | | | | |
| Jan. | 16 | ..... | 90 | 1 |
| Feb. | 15 | ..... | 92 | 11 |
| March | 10 | ..... | 83 | 12 |
| April | 14 | 1 | 69 | 11 |
| May | 26 | ..... | 47 | 11 |
| June | 19 | ..... | 84 | 11 |
| July | 12 | 1 | 75 | 11 |
| 7 mo. | 112 | 2 | ..... | ..... |

## Machine Tool Purchases Lower During July

Since the high for 1931 set in March, actual orders for machine tools, according to the National Machine Tool Builders' association, have declined steadily, July's total actual order index being 61.5. Index of actual gross orders follows:

| 1930 | *Index A | *Index B | *Index C | Tota' |
|---|---|---|---|---|
| July | 78.4 | 124.4 | 132.9 | 91.1 |
| Aug. | 102.4 | 153.9 | 119.1 | 113.8 |
| Sept. | 129.7 | 138.8 | 215.9 | 135.9 |
| Oct. | 81.3 | 112.3 | 118.1 | 90.1 |
| Nov. | 56.0 | 67.8 | 96.6 | 60.4 |
| Dec. | 58.4 | 92.7 | 126.6 | 68.8 |
| Yr. av. | 119.8 | 146.4 | 164.7 | 127.8 |
| 1931 | | | | |
| Jan. | 64.6 | 75.1 | 68.6 | 66.9 |
| Feb. | 68.3 | 129.8 | 93.1 | 83.7 |
| March | 109.2 | 133.4 | 180.9 | 117.6 |
| April | 97.7 | 130.3 | 95.0 | 105.1 |
| May | 81.4 | 104.5 | 105.7 | 87.2 |
| June | 74.3 | 70.3 | 80.7 | 73.6 |
| July | 52.1 | 95.4 | 66.1 | 61.5 |

*Note—Index A, base over $50,000; Index B, bases $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

## Electrical Goods Orders Show Marked Gains

Orders booked during the second quarter for electrical goods were $225,456,706, an encouraging gain from the $182,485,841 in the first quarter. Totals following, by quarterly tabulation of the department of commerce, from reports of 84 manufacturers, include motors, storage batteries, domestic appliances and industrial equipment:

| Quarters | 1931 | 1930 |
|---|---|---|
| 1st* | $182,485,841 | $314,329,372 |
| 2nd | 225,456,706 | 292,902,071 |
| 3rd | ..... | 228,732,926 |
| 4th | ..... | 208,935,443 |
| Total | ..... | $1,044,899,812 |

*Revised.

## Trucks, Tractors Gain For Second Month

Increased domestic business accounted for the increased shipments of electrical trucks and tractors in July to a total the highest since March. Foreign shipments were slightly off. Ten leading manufacturers report the following to the department of commerce:

| | | Shipment | |
|---|---|---|---|
| 1930 | Total | Domestic | Export |
| July | 108 | 99 | 9 |
| 7 mo. | 856 | 751 | 105 |
| August | 92 | 81 | 11 |
| September | 81 | 75 | 6 |
| October | 93 | 90 | 3 |
| November | 45 | 36 | 9 |
| December | 51 | 42 | 9 |
| Year | 1,191 | 1,050 | 141 |
| 1931 | | | |
| January | 38 | 33 | 5 |
| February | 56 | 50 | 6 |
| March | 93 | 84 | 9 |
| April | 71 | 48 | 23 |
| May | 69 | 69 | ..... |
| June | 75 | 50 | 25 |
| July | 78 | 63 | 15 |
| 7 mo. | 480 | 397 | 83 |

## June Steel Furniture Orders Lose Ground

New orders for steel furniture and shelving presented a further diminished total in June. Shipments of shelving were up slightly for the only upward revision in either classification. The following monthly figures have been revised by the department of commerce:

**(In Dollars, 000 Omitted)**

| | Business Group | | Shelving | |
|---|---|---|---|---|
| 1930 | New orders | Shipments | New orders | Shipments |
| June | 1,978 | 2,093 | 749 | 774 |
| 6 mo. | 13,864 | 14,552 | 4,951 | 4,904 |
| July | 1,802 | 1,786 | 644 | 661 |
| Aug. | 1,725 | 1,928 | 579 | 604 |
| Sept. | 1,796 | 1,854 | 553 | 542 |
| Oct. | 1,833 | 1,902 | 587 | 645 |
| Nov. | 1,587 | 1,632 | 468 | 502 |
| Dec. | 1,591 | 1,774 | 283 | 515 |
| Year | 24,198 | 25,429 | 8,065 | 8,374 |
| 1931 | | | | |
| Jan. | 1,840 | 1,768 | 417 | 422 |
| Feb. | 1,478 | 1,563 | 401 | 382 |
| March | 1,487 | 1,522 | 455 | 481 |
| April | 1,424 | 1,481 | 408 | 423 |
| May | 1,306 | 1,305 | 506 | 409 |
| June | 1,272 | 1,221 | 452 | 449 |
| 6 mo. | 13,864 | 14,552 | 4,951 | 4,904 |

## Bar Pamphlet Is Ready

Washingon—Bureau of standards, department of commerce, is distributing a pamphlet giving the detail of the simplified practice recommendation on steel reinforcing bars.

# Ore Shipments Cut To Insure Normal Stocks by Spring

THIRTEEN Great Lakes iron ore vessels have been taken out of service in the past week, and at least five more are to be withdrawn in a few days. This means that the amount of ore to be shipped from the Lake Superior district this year will be nearer 25,000,000 tons than 28,000,000, at which rate the fleet has been carrying ore to lower lake docks. Estimates have been continually scaled down from a top figure of 35,000,000 tons anticipated by some shippers at the outset of the season. Shipping has been retarded to reduce stocks.

The Pittsburgh Steamship Co., United States Steel Corp. subsidiary, took off seven boats last week, and now is operating 52 of its 86 units. A large independent steel company which in addition to its own carriers has been engaging five others so far this season, is now releasing them. Six other vessels have just been laid up for the season, loaded with storage grain.

Instead of 198 freighters continuing to operate, as recently, there will be only 180 remaining in service, of a fleet of 328. A few additional vessels are likely to go up the lakes for grain, but even the movement of grain will not compensate for the heavy loss of iron ore tonnage.

### Miners Face Difficulties

With 59 per cent of the fleet's capacity now engaged in hauling ore, grain or coal, the situation in this department of the industry does not present as dark a picture as that at the Lake Superior iron mines. The Steel corporation, Pickands, Mather & Co., and other large independents have been giving work to their miners two to four days a week. Company officials have been studying the problem and some have reduced operations during the warm months when the hardship would be least severe, to be in a position to speed up work in the coming fall and winter.

With the rotation of jobs, the starting and stopping of mines in various localities, it is difficult to estimate the employment situation. An official of one company who recently made a trip over the ranges says that at least 50 per cent of the miners are idle at one time.

Consumers' estimates of requirements have been reduced by successive stages this season. Shipments to Aug. 1 were only 10,709,320 tons. The July figure was 4,956,061 tons. This July rate would have to be maintained through August, September and October, and half of November to bring the total for the year to 27,700,000 tons. The reduction in vessel operation indicates that shippers do not expect to attain this amount.

The July consumption of iron ore was 1,832,382 tons, less than half the tonnage that was brought down the lakes, and the industry moved up to Aug. 1 with 31,817,253 tons on hand at lower lake docks and furnaces, as compared with 30,515,000 a year ago.

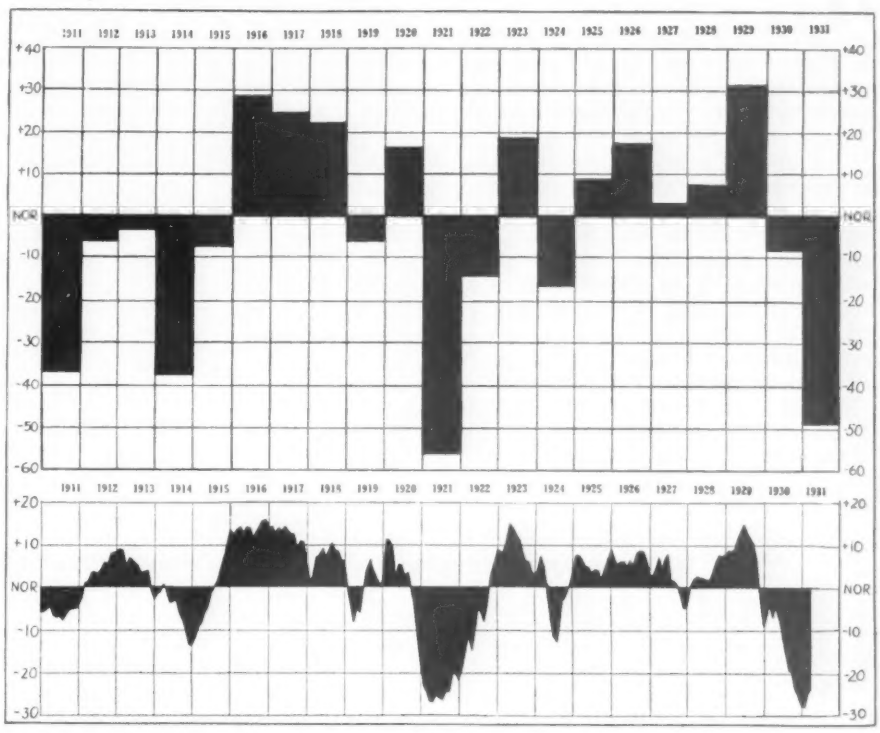
Last year, however, a long period of declining consumption stretched ahead while now the industry is convinced it is entering a period of increasing demand. Producers and consumers believe July marked the bottom.

In no other branch of the steel industry have more efforts been made this year to curtail stocks than in the ore trade. Shippers compare shipments with consumption, with a view to having normal stocks on hand at lower lake ports and furnaces May 1. Normal stocks are considered to be 20,000,000 tons. Recently it was figured that consumption would have to show a monthly average increase of 1,000,000 tons in the last three months this year and the first four months next year, to keep step with the rate of shipments and leave normal stocks on hand May 1. Then the movement was slowed down to a rate commensurate with 25,000,000 for the year.

A few ore shippers believe this paring down process has gone too far. They predict there will be a "scramble" for ore early next season, that the fleet will be out early, and that 1932 will be a good year in the industry.

## Gary Left $22,000,000

New York—Judge E. H. Gary, chairman of the United States Steel Corp. from its founding in 1901 to his death in August, 1927, left an estate valued at $22,579,521, according to an accounting filed recently in court at Mineola, N. Y. Due to the fact that nearly all of the stocks of Judge Gary were sold in 1929, the value was $5,558,269 greater than the first appraisal in 1927.




*IRON ORE SHIPMENTS FOLLOW GENERAL BUSINESS TREND*

*The lower chart depicts American industrial activity since 1910, compiled by Leonard P. Ayres, Cleveland statistician. The upper chart represents Lake Superior iron ore shipments for the same years as the lower chart. The normal line for ore shipments was computed from the average annual shipments, taken separately for the two decades, similar to the method used in obtaining the normal line for general industrial activity. It will be seen that ore shippers have been synchronizing the ore movement with general industrial conditions, more so than they did in earlier years*

# Industrial Men in the Day's News

## J. M. Hipple, General Works Manager, Westinghouse Electric & Mfg. Co.

BY successive promotions he has risen since 1898 from a position in the testing department to general works managership.

FOR the past four years he has been works manager at East Pittsburgh, but now has jurisdiction over operations at all company plants.

HE did much important association work at one time, but latterly has paid particular attention to educational work conducted by the company to develop school graduates.

RESPONSIBILITY for all manufacturing operations of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was vested in J. M. Hipple when J. S. Tritle, vice president and general manager, appointed him general works manager as noted in STEEL of July 2. He had been works manager at East Pittsburgh since Sept. 1, 1927, and was succeeded in that office by C. H. Champlain, who had been manager at Sharon, Pa., for eight years.

Mr. Hipple was born at Jefferson, O., attended Ohio State university from 1894 to 1898, and was graduated that year in mechanical engineering. He soon became identified with the Westinghouse company's testing department, where he remained about a year. He next was assigned to the engineering department and in 1911 was made manager of the motor engineering department which he headed until Sept. 1, 1927, when he was made works manager at East Pittsburgh. He continued in that office until his latest appointment.

At present Mr. Hipple is a member of the American Management association, and in 1929 presented a paper before that body on "Research and Development Departments." He also was co-author with G. D. Fish of the paper entitled "Application of Electric Arc Welding to Building and Machine Construction," presented before the International Congress for Metallic Structures at Liege, Belgium, in September, 1930. He likewise has contributed articles on design subjects to technical business papers and college technical papers.

Mr. Hipple was active for several years in the American Institute of Electrical Engineers, particularly on its committee on rating of electrical machinery. When he was identified with the National Electrical Manufacturers association he served as chairman of its large motor division and the standardization committee. He was chairman of conference committees of the National Electric Light association, Iron and Steel Electrical Engineers, and American Railway Electrical Engineers.

Latterly Mr. Hipple has taken a great interest in the educational work conducted by the Westinghouse company. While in the engineering department he was a member of its educational committee, which guides the training of graduate students for engineering work. Since that time he has been active in the development of boys through trades training and intermediate training courses for high school and junior technical school graduates, and in the development of technical graduates for manufacturing work.

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LOUIS J. VOYER, who last April was appointed district manager of sales at Youngstown, O., for Newton Steel Co., Newton Falls, O., and Monroe, Mich., has been made district manager of sales at Cleveland, succeeding F. C. Flood, resigned.

Mr. Voyer has been with the company since August, 1925, when he was placed in charge of the New York sales office, succeeding H. D. Eller. Mr. Voyer formerly had been secretary and general sales manager of Ohio Corrugating Co., Warren, O., going there in 1919 from Liberty Steel Co., Warren, where he had been in turn assistant general manager of sales and general manager of sales, from early 1918 to June, 1919.

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A. A. Adcock has been appointed plant superintendent at Oklahoma City, Okla., for American Tank & Equipment Corp., a subsidiary of Black, Sivalls & Bryson Inc., Bartlesville, Okla. He formerly was with Gleaner Combine Harvester Corp., Kansas City, Mo., in the same capacity.

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William H. Crosby, formerly president of the Crosby Co., sheet metal stampings, Buffalo, has been elected chairman. Henry W. Crosby, formerly secretary, now is president; Edward S. Gram is vice president; John M. Smith is treasurer; Howard W. Kurtz, formerly assistant engineer, now is assistant treasurer; Fred C. Burkhardt, chief engineer, now also is secretary; Charles L. Sager is assistant

secretary, and Charles J. Pankow is superintendent.

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Jesse F. Welborn, chairman, Colorado Fuel & Iron Co., Denver and Pueblo, Colo., has been appointed to an unemployment relief committee by the mayor of Denver.

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John J. Stanton, merchandise manager of the northwest district of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed Milwaukee manager of the company.

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William J. Gibney, formerly vice president of Bingham & Taylor, Buffalo, has severed his connection with that firm and become affiliated with the Strong Steel Foundry Co., Buffalo, as assistant to the president.

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Edward C. Holmes of Plymouth, Mass., for ten years a director of Cobb & Drew Inc., also of Plymouth, has been elected president of the company. He succeeds Charles A. Bumpus, deceased. Mr. Holmes' father was treasurer of the company for many years.

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F. C. Butman, formerly with the Dispatch Oven Co., Minneapolis, but recently on leave of absence to act as efficiency engineer for Roneo Ltd., Romford, England, has been made district manager of western New York territory for the Dispatch company.

E. B. Wolf has joined the Detroit sales office of the Dispatch company.

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I. Edmund Waechter, at various times connected with the Standard Tool Co., Crucible Steel Casting Co., Carnegie Steel Co., Cleveland Hardware Co., Baker-Waechter Co., Brown & Sharpe Mfg. Co., General Chemical Co., Illinois Foundry Co. and National Bronze & Aluminum Foundry Co., has become associated with the American Hammered Piston Ring Co., subsidiary of the Bartlett-Hayward Co., Baltimore.

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Otha Lewis, for three years past in charge of the warehouse at Memphis, Tenn., of Wheeling Steel Corp., Wheeling, W. Va., has been appointed foreman of the galvanizing shipping department at its Portsmouth, O., plant.

Harry M. Jefferson, of Wheeling and formerly of Portsmouth, has been appointed to succeed Mr. Lewis at Memphis and has taken on other duties there.

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E. D. Kaser, secretary-treasurer of the Durabilt Steel Locker Co., Aurora, Ill., has been made president of the company, succeeding C. W. Killian, who resigned June 13 on account of ill health. Mr. Kaser, is a 1911 graduate of Armour institute, Chicago, and since 1919 has been interested in the manufacture of lockers and similar steel products.

Other officers of the Durabilt company are: Vice president, V. C. Kaser; treasurer and manager of sales, H. S. Hatch; and secretary, W. H. Graham. D. V. Trapp has been named purchasing agent to succeed E. V. Pauly, resigned.

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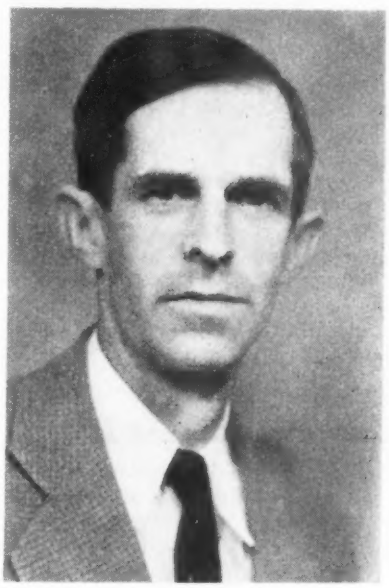
William F. James formerly manager of the Middle Atlantic district of the Westinghouse Electric & Mfg. Co., with headquarters at Philadelphia, has been appointed assistant to the commercial vice president of the Atlantic division. Mr. James has been with the Westinghouse company since 1909. In 1912 he began to specialize in steel mill electrification, in 1923 he became manager of the industrial division, and two years later was made Middle Atlantic district manager.

E. W. Loomis, with the Westinghouse company since his graduation from the University of Delaware in 1914, as manager of the mill and mining section and recently manager of the northeastern industrial division, has been appointed manager of the Middle Atlantic district.



**H. H. Morgan**

Who, as noted in STEEL of Aug. 13, was recently made special engineering representative of Weller Mfg. Co., Chicago, at 10,228 Woodwood avenue, Detroit.

## Delay Stock Value Suit

Youngstown, O.—By agreement of both sides, the lawsuit to determine the fair cash value of Youngstown Sheet & Tube Co. common stock, resulting from the opposition of minority stockholders to the proposed merger with the Bethlehem Steel Corp., has been postponed again. Tentatively the hearing is now set for Sept. 14.

# Obituaries

CHARLES H. LEINERT, 63, president of Leinert Valve Co., Chicago, died recently in that city. Prior to locating in the United States in 1890, Mr. Leinert studied mechanical engineering in his native city, Vienna, and in Switzerland. He was identified with several manufacturers in this country, including Allis-Chalmers Mfg. Co. He went with Illinois Steel Co., South Chicago, Ill., in 1907, remaining about ten years. In 1917 the United States government made him chief inspecting engineer for plants making reduction gears, turbines, reciprocating engines, etc., for the shipping board. In August, 1924, he founded his own company. He invented, developed and patented considerable machinery.

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George A. Newman, secretary, Syracuse Chilled Plow Co., Syracuse, N. Y., died recently.

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William H. Wilson, purchasing agent of the Hayes Wheel Co., Merriton, Ont. for the past ten years died in his home in that city.

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George Cook Newton, 36, for the past six years plant superintendent of the Erie Bolt & Nut Co., Erie, Pa., died Aug. 6.

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Bruce Ford, second vice president, Electric Storage Battery Co., Philadelphia, and at one time associated with the Lorain Steel Co., Johnstown, Pa., died at Philadelphia, Aug. 10.

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Henry W. Zimmerman, founder and president, Atlas Engineering Co., Milwaukee and Clintonville, Wis., manufacturing belt and bucket conveyors, concrete mivers and car unloaders, died Aug. 9 at the age of 72.

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J. Edward Ogden, 61, founder and head of the J. Edward Ogden Co., New York, manufacturer of engineering specialties, and a director of the Star Expansion Bolt Co., died Aug. 11.

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Edward H. Colgan, 63, owner of Little Rock Boiler & Iron Works, Little Rock, Ark., died Aug. 4. He was born in Springfield, Ill., and was educated there but later removed to Pine Bluff, Ark., and from there to Little Rock, where he founded the boiler and iron works in 1905.

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Carleton M. Bower, a vice president of the Southern Wheel Co., died Aug. 10 at New York after an illness of several months. Mr. Bower was born 51 years ago at Clarkston, Mich., and formerly was vice president of the National Car Wheel Co., later absorbed by the Southern Wheel Co.

# MIRRORS of MOTORDOM

*DETROIT*

AUGUST, commonly accepted as the low point of the summer for the automobile industry, is half gone without production having fallen measurably below the rate of 50,000 passenger cars and trucks weekly.

Thus far, as one producer has shut down for vacation another has resumed, virtually evening up the balance. It is true, of course, that the low-priced manufacturers with the exception of Plymouth are easing off, in keeping with the trend in retail sales, but even including Ford the net decline has not been great.

Hence August comes up to the half-way mark with approximately 100,000 units manufactured. It is not to be expected that the last half of the month will quite equal the first, but it should not fall below 85,000 to 90,000 units.

August, with a forecast total of 185,000 to 190,000 units, thus would compare with an estimated 215,000 for July and 249,462 for June, but it would not descend to the low level of October, 1930, to January, 1931, inclusive.

## Ford Figures Confuse

In this computation for August, Ford is included for about 40,000 units. Since motors for these units probably were reported in Ford production figures earlier in the year, this estimate for August is correct for actual assemblies, and in the earlier months a corresponding reduction in assemblies, but not motor production, would have to be made.

Concerning fall business, Detroit is moderately optimistic. Despite the program of withholding model changes until the January, 1932, shows, there is increasing talk of several important manufacturers announcing revisions in the fall, which would certainly prove some stimulus and be no deterrent.

Plymouth continues in third place in point of actual weekly production, with Chevrolet and Ford leading it, although relating output to capacity its gait is the fastest. Plymouth's current schedule is 1300 units daily, 6 days a week. The foundry division is reported to be 30,000 Plymouth units behind orders and is tooling up to produce 2500 units daily.

## Chevrolet Still Leads

Continuing with a weekly total of about 14,000 units or close to 3500 units daily, 4 days a week in the assembly department, Chevrolet clings to first place. Thus far no summer shutdown has been scheduled and on the basis of actual domestic passenger car sales, Chevrolet is the leader for the year to date.

By easy stages Ford is curtailing assembly, averaging slightly more than 4000 units daily, 3 days a week. The new Ford assembly plant at Buffalo is expected to start operations Sept. 1, while reports that a new Ford assembly plant will be constructed at Fairport, O., are confirmed.

Hudson and Essex cars beginning this week are equipped with a new electrical device called "Startix," which, once the ignition key is turned, automatically cranks the motor and keeps it cranked. This producer also is broadening its service, providing inspection and adjustments within 90 days after delivery or 4000 miles of driving, regardless of where the car was purchased. Hudson-Essex output continues unchanged at about 725 units weekly.

Plymouth is not the only Chrysler division to display noteworthy activity. Dodge, making a big drive in the truck field, has pushed its weekly output for all models up from 1300 to 1700, more than double the same week of 1930 and almost triple the corresponding week of 1929. The Dodge plant is operating 4 days a week.

DeSoto is averaging 150 units daily, 6 days a week, a 50 per cent increase in weekly output. Chrysler proper holds unchanged at close to 300 units a day, 4 days a week. Chrysler has added a convertible sedan to its imperial eight line, stressing insulation against noise and weather.

With Willys-Overland output last week at 1200 units, a slight decline from the previous week, an August output of about 5000 units is indicated.

Nash continues unchanged at 2300 units weekly. Studebaker also is largely unchanged at about 1150 units weekly, with the August schedule tentatively based upon 4000 cars. Oldsmobile is another maker on a stable basis, at 250 cars a day, four days a week.

## Most Makers Steady

Cadillac-LaSalle, on a 4-day week, plans to manufacture 800 cars this month. It has slightly increased its weekly output of all models from 120 to 175 units. Graham and General Motors truck are resuming this week.

Other weekly totals of automobile manufacturers, showing little variation in recent weeks, are Buick 1200, Oakland-Pontiac 1650, Reo 500, Hupmobile 175, Auburn-Cord 550, DeVaux-Hall 275, Durant 200, Franklin 175, Packard 425, Marmon 125, Pierce-Arrow 100, Lincoln 50.

While manufacturers of aluminum and its alloys have been gaining a hearing in the automotive industry, particularly at Peerless in Cleveland, which is planning what is practically an all-aluminum car, German engi-

neers have been making progress with alloys of magnesium, which are said to weigh only two-thirds those of aluminum. One German magnesium alloy is called elektron.

A former Ford research engineer disclosed recently to the Society of Automotive Engineers that Ford has done some development work on a "tear drop" car. Present closed body and hood lines have much in common with the old horse and milk wagon, this engineer points out. The "tear drop" car would have its mileage doubled through decreased wind resistance, and with the engine mounted on a separate spring suspension behind the passenger compartment would be vibrationless, odorless, and noiseless.

Bethlehem Steel Co. is manufacturing for a Topeka, Kans., inventor a steel rim, 3 inches smaller in diameter than an inflated tire, which is bolted to the inner side of a wheel to prevent blowouts from wrecking cars. . . . Connecticut is considering a law making it mandatory for trucks to be equipped with governors to hold down their speed—another use for steel. . . . An eastern inventor is said to be working on a device which would automatically record automobile speeds on an indicator card, affording complete record of a car's speed to police.

## Financial News of Steel Industry

EMPIRE STEEL CORP., Mansfield, O., has shown an improvement in its financial position with the July report of operations submitted by C. H. Henkel, receiver. Operating profit was $7243 in July, against $4800 in June. Cash position has increased from $140,749 as of May 28 to $495,560 as of July 31. Accounts payable in July showed a reduction of $100,000 and there has been an improvement in working capital.

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Vanadium Corp., New York, had net loss of $129,836 for the first half, contrasting with net income of $1,250,237 in the same period of 1930.

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Follansbee Bros. Co., Pittsburgh, reports after depreciation and interest, first half net loss of $398,687, contrasted with net profit of $4353 the same six months of 1930.

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National Steel Corp., Pittsburgh, bond issue of $40,000,000 has been admitted to the list of the New York stock exchange. Bonds are first collateral mortgage sinking fund gold bonds, 5 per cent series, due 1956.

Increased efficiency in use of fuel in railway locomotives since 1920 has saved a total of $630,059,000.

# Here and There in Industry

GULF STATES STEEL CO., Birmingham, Ala., has established a district sales office at Greensboro, N. C., in charge of S. D. Yardley. The Greensboro office is at 513 North Carolina Bank building, telephone 2-3618, and will serve the trade of North and South Carolina and Virginia.

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Virginia Bridge & Iron Co., Roanoke, Va., has opened a sales and engineering office at 1203 Post-Dispatch building, Houston, Tex., in charge of H. W. Morgan.

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Norma-Hoffmann Bearings Corp., Stamford, Conn., has opened a sales office at 1014 American Bank building, Cincinnati, in charge of C. D. Kilham, formerly sales engineer at the home office and at Cleveland.

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Allis-Chalmers Mfg. Co., Milwaukee, has moved its sales office formerly at Bloomington, Ill., to Peoria, Ill., where it will be consolidated with that of the Advance-Rumley Corp. which it recently absorbed.

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Timken Roller Bearing Co., Canton, O., has moved its Kansas City, Mo., office and warehouse from 2018 Grand avenue to 1819 McGee Trafficway, where larger quarters are available. L. J. Halderman is district manager.

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Heim Machine and Engine Works, Oklahoma City, Okla., has been organized by C. E. Heim, owner and manager, to engage in heavy welding and general machine work. A shop building has been leased at 4213 South Robinson street.

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Bethlehem Steel Co., Bethlehem, Pa., is consolidating the Detroit district offices of its subsidiaries, McClintic-Marshall Corp. and Kalman Steel Co., with the Bethlehem Steel Co. sales offices on the thirty-second floor, Penobscot building, Detroit.

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Martell Packings Co., Elyria, O., has sold its packing business to the France Packing Co., Tacony, Philadelphia, manufacturer of metallic packings for 35 years. A. H. Krugman, for 20 years with the Martell organization, has become affiliated with the France company.

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American Heater Corp., St. Louis, has been purchased by the American Water Heater Co., Chicago. Production will be continued at the St. Louis plant as heretofore, and plans are being made for increased facilities and plant enlargement. Harry C. Tabler will be vice president in charge of manufacture in St. Louis.

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Allis-Chalmers Mfg. Co., Milwaukee, by absorption of the electrical departments of the Brown Boveri Co. Inc. and the Condit Electrical Mfg. Corp., has taken over electrical orders totaling $1,006,000, including an order for $460,000 worth of equipment for the Commonwealth Edison Co., Chicago.

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Beardsley & Wolcott Mfg. Co., Waterbury, Conn., and the Connecticut Electric Mfg. Co., Bridgeport, Conn., have decided to merge, stockholders' assent being given. Industrial Managers Inc. is to form a Connecticut corporation to acquire the assets of both companies by exchange of stock.

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Healey & Watt, engineers, has been formed at Chicago, with offices at 33 North LaSalle street, by James H. Watt and Maj. Frank P. Healey, for practice of engineering. Mr. Watt for seven years was connected with the McClintic-Marshall Co., Pittsburgh. Major Healey was for several years manager of the engineering department of the State Bank of Chicago and more recently with the Foreman-State Trust & Savings Bank.

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Thompson Products Inc., Cleveland, has received an order from the Fiat Motor Co., Milan, Italy, for 200 special copper-cooled valves for use in the 24-cylinder motor of an Italian Schneider cup racing plane. This motor develops 2500 horsepower, each cylinder contributing slightly over 100 horsepower. The copper-cooled valve has been developed recently by the Thompson organization for use in motors operating at excessively high temperatures.

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Worthington Pump & Machinery Corp., Harrison, N. J., has purchased the manufacturing facilities of Metalweld Inc., maker of portable air compressors, Twenty-sixth street and Hunting Park avenue, Philadelphia. Active management of Metalweld Inc. will be under the direction of S. John Oechsle and J. N. Childs. Metalweld Inc. will continue to sell and service Worthington contractor equipment under a sales franchise and will also carry on the business of its subsidiary, the Philadelphia Compressor Rental Co.

# EDITORIAL

## Will Steel Win Lead in Air Transportation?

FROM the date of its advent as a commercial material steel has been an important factor in the development of transportation. On land, on sea and in the air, travel owes much to the service of steel.

First iron and later steel tires on the wooden wheels of wagons gave them strength and durability which had been impossible when wood was the sole material.

Iron rails served the pioneer railroads of the country but it was steel which permitted the expansion of railroad mileage in the last quarter of the nineteenth century and thus opened up for development the resources of the western part of the country. Steel, first for trucks and later for all parts of freight cars, enabled the roads to carry greater loads per unit and to make noteworthy progress in the safety of rail transportation. Likewise steel in locomotives has helped motive power engineers to assemble in a limited space the necessary components of a moving power house.

Steel also has dominated all other materials in shipbuilding. It has permitted the construction of freighters and passenger liners of size, strength and reliability.

The bicycle, which enjoyed a decade or more of fame in the development of transportation in America, was primarily a product of steel. It brought into play an important problem of strength and lightness.

### Steel Rose to Great Heights in Service to Automobile Industry

At the beginning of the "horseless carriage" period, steel played only an inconspicuous part in the early cars. But as the industry progressed and as the need for new types of steel became more pronounced, the steel industry responded with the result that today steel is the backbone of the motor car industry. It is not only the primary material in the automobile itself, but it is the dominating material in the buses, trucks, trailers, tractors and other members of the important automotive family.

Steel also is pre-eminent in the construction of tunnels, subways, bridges and elevated structures so essential in modern transportation. Only on highways, where concrete and other materials are in the lead, is steel forced to take a secondary place in land transportation, and even here steel reinforcement for pavements and steel guard rails find important use.

With this rich tradition of steel's leadership in transportation on land and water, it will be surprising if steel does not eventually gain first rank as a material in air travel. In the early development of airplanes, wood, fabric and nonferrous metals were employed almost to the exclusion of the heavier steel. But in the brief span of years during which airplanes have been a factor in commercial transportation the use of steel has been broadened considerably. Alloy steel has supplanted wood for many parts and while aluminum alloys are essential for numerous vital members of a plane, the use of steel for strength has gained favor.

### To Date Steel's Aid to Air Transport Has Been in Ground Structures

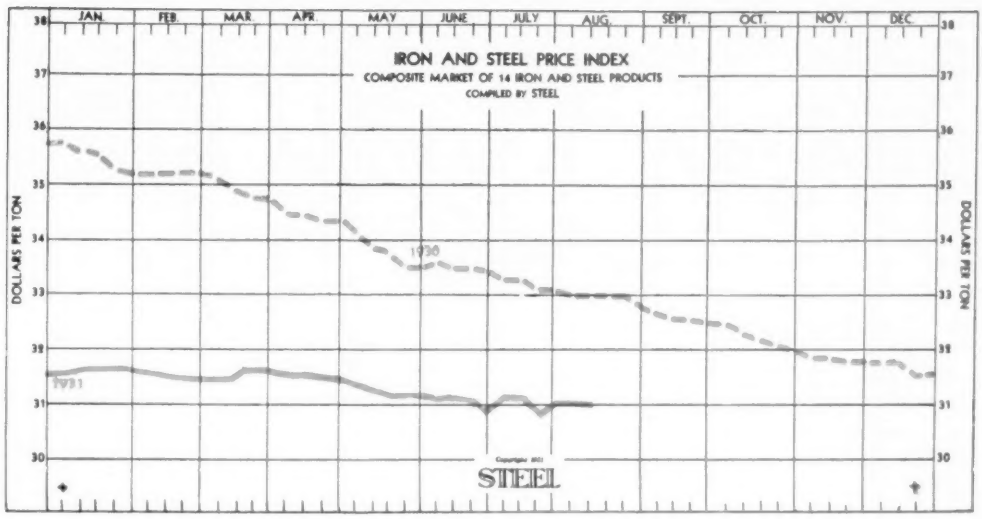
In the lighter-than-air craft, aluminum alloys stand above all other materials, but even here steel has gained a foothold. Alloy steel has been employed in the majority of the larger rigid dirigibles for bracing the duralumin frames. Corrosion-resistant steel is used for many fittings and fastenings, for certain oil and fuel piping and tankage, and for valves and transmission details. The British R-101 had an unusually large amount of stainless steel in its hull and it is not improbable that alloy steel will be used more extensively to supplement duralumin in large ships of the future. The U. S. S. AKRON, which has comparatively a small amount of steel in its structural members and details, has more than six tons of steel in other parts.

While thus far steel has served only in a minor capacity in airplanes and ships, it has played an important role in the development of facilities for building, operating and maintaining these craft. Structural steel for hangars and shops already has amounted to several hundred thousand tons. The demand for steel for beacon towers, landing field enclosures, offices, waiting rooms and other accessories to air transportation is steadily mounting.

Within the next five years the airship, as exemplified by the U. S. S. AKRON, will demonstrate whether or not this type of craft is feasible for transoceanic transportation. If it succeeds, a new need for steel will arise in the docks, masts, winches, etc. required for dirigible operation.

Steel, chief handmaiden to land and water transportation, some day may find itself pre-eminent in the air.

# THE BUSINESS TREND




**Weekly Figures**

| | |
|---|---|
| Aug. 12 | $31.06 |
| Aug. 5 | 31.06 |
| July 29 | 31.06 |
| July 22 | 30.98 |
| July 15 | 30.98 |

**Monthly Averages**

| | |
|---|---|
| July | $31.05 |
| June | 31.02 |
| May | 31.37 |
| April | 31.59 |

## Outlook for Fall Upturn Is More Promising

SIGNS which later may prove to be forerunners of the expected fall upturn in business are more plentiful. In spite of the fact it had been difficult to see any promise of any immediate improvement in steel demand, STEEL's market summary last week was the most encouraging that has appeared in many months. A gratifying volume of awards for structural steel and pipe and the placing of the first important railroad car contract in more than a month made cheerful news.

Since the time these transactions were announced there have been a number of developments which add weight to the hope that business is on the verge of a definite improvement. Although the value of building awards for July reported by the F. W. Dodge Corp. was below that of June, the contracts in several important territories registered more than a seasonal gain.

### Building and Automobile Situations Embrace Encouraging Features

In the district extending from middle New Jersey and eastern Pennsylvania to and including Virginia the value of new building awards in July was 25 per cent ahead of the June total. Lesser advances were noted in New England and the Chicago and Pittsburgh territories. Bradstreet's record of building permits for 215 cities showed a gain in valuation of 13.3 per cent over June. This is significant because gains in July have occurred in only six of the last 20 years.

It is idle to contemplate what is in store for the automobile industry, but it is apparent that the need for replacements is growing daily. The present volume of sales is not sufficient to compensate for the rate at which cars are being worn out. Already this condition has resulted in an improvement in tire consumption and it is only a matter of time until car buying must increase.

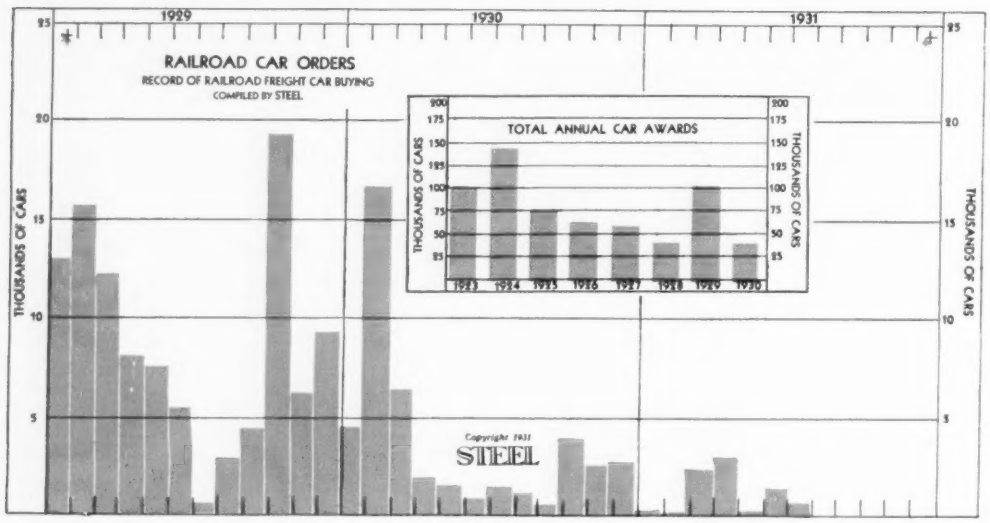
### Steel Is Being Consumed More Rapidly Than Produced at Present

The petroleum industry is undergoing drastic measures aimed at stabilization and at the same time the more enterprising companies are improving refining plants. Some pipe line projects are coming out, as evidenced by last week's awards. The railroads, while economizing more effectively than heretofore, are forced by necessity to protect themselves against future demands and a limited amount of replacement of rolling stock will be necessary.

Col. Leonard P. Ayres of the Cleveland Trust Co. states that "wear, rust and obsolescence are probably consuming iron and steel at a more rapid rate than furnaces and mills are turning out new steel."

So much has been said of the weakness of the wheat and cotton situation that the brighter aspect of certain grains, dairy products and livestock is overlooked. With the exception of sheep, the livestock outlook is encouraging. Prices of eggs and milk are higher in many localities. Farmers who have not neglected these sidelines are profiting from the improved conditions.

Considering these indications of improvements in widely diversified lines of activity, the noticeably better tone of business sentiment now displayed seems justified.




| | 1931 | 1930 |
|---|---|---|
| July | 367 | 1,389 |
| June | 1,910 | 998 |
| May | 20 | 1,392 |
| April | 2,798 | 1,997 |
| March | 2,166 | 6,118 |
| February | 50 | 17,027 |
| January | 100 | 5,072 |

## Awards of Railroad Cars Drop Back To Very Low Level in July

Once again in July activity in railroad car building subsided almost to a negligible status, as but 376 cars were placed. In July, 1930, there was a gain to 1389 cars, but in 1929 and 1928 July was an off month, with only 341 and 582 cars ordered, respectively. With only a few cars ordered in January and February, moderate awards in March and April, a new low was set in May. June was a month of recovery, though not to active levels, and with the small awards of last month, 1931 to date has been a year of record lows. The seven-month aggregate of 7411 compares with 33,993 in the same period in 1930; 63,157 in 1929 and 28,916 in 1928. Current reports show a slight August revival.

## Cut in Output of Copper Fails To Halt Gain in Stocks

Although a further cut was made in the output of refined copper, July shipments slumped sharply, with the result that a new high was set in stocks on hand. Production sought a new low at 96,408 tons, or 3110 tons daily, compared with 3276 tons per day in June and 3974 tons in July, 1930. Shipments dropped under the previous low of May and amounted only to 69,465 tons, also a record for several years. The daily rate of 2241 tons compared with 2782 tons in the previous month and 3803 tons a year ago. Stocks at the end of July were 440,417 tons, an increase of 26,943 tons, the second largest gain of the year. It was the fourth successive rise, following temporary declines.

**Stocks**

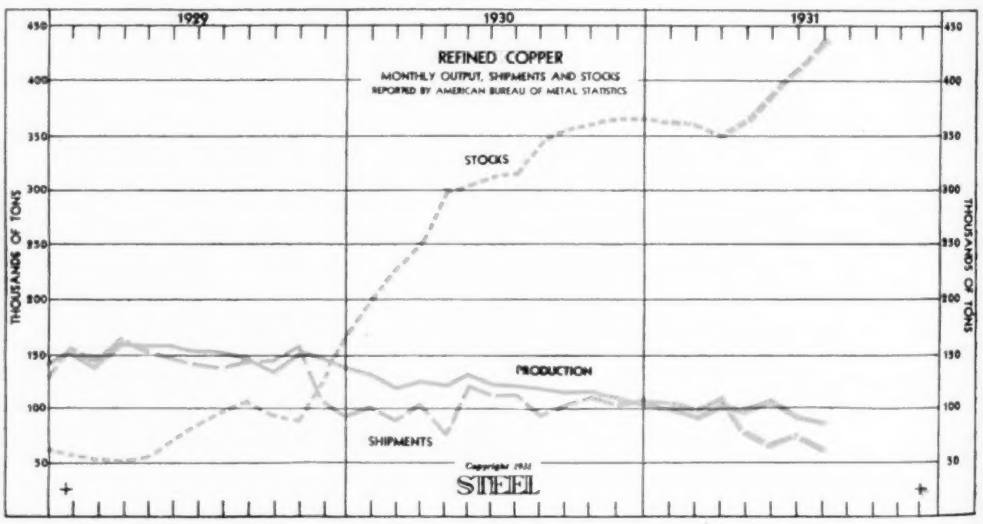
| | Tons |
|---|---|
| July, 1931 | 440,417 |
| June, 1931 | 413,474 |
| July, 1930 | 322,039 |

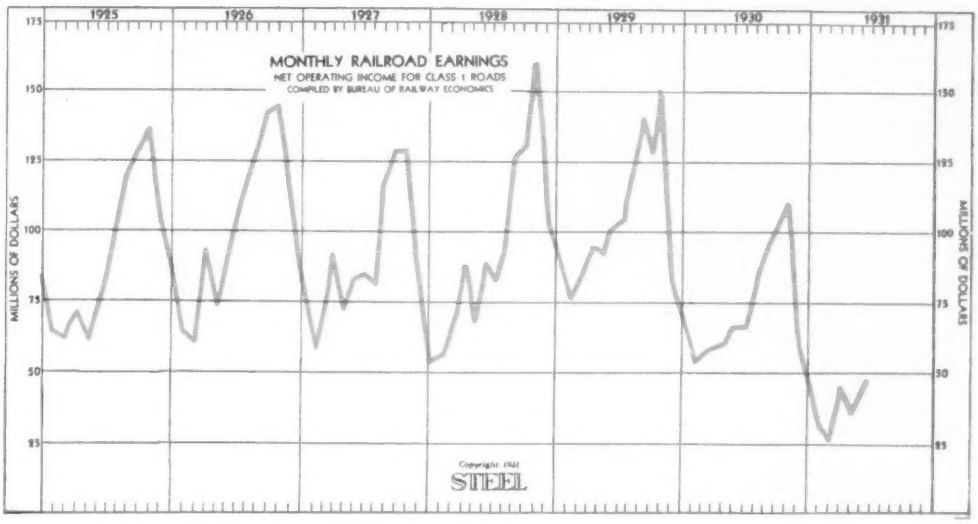
**Production**

| | |
|---|---|
| July, 1931 | 96,408 |
| June, 1931 | 98,275 |
| July, 1930 | 123,179 |

**Shipments**

| | |
|---|---|
| July, 1931 | 69,465 |
| June, 1931 | 83,468 |
| July, 1930 | 117,902 |





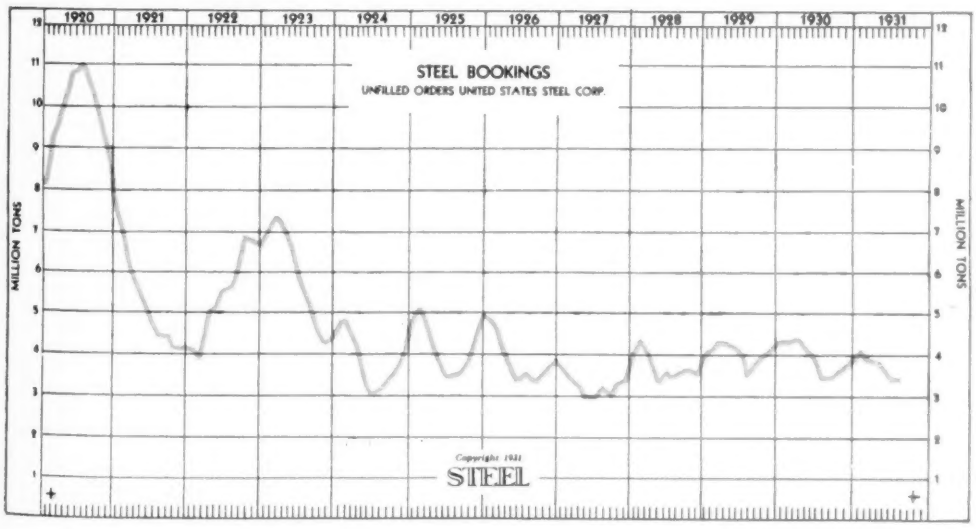

| Million Dollars | | |
|---|---|---|
| June | 50.1 | 69.1 |
| May | 41.2 | 69.3 |
| April | 39.0 | 62.6 |
| March | 45.9 | 61.2 |
| Feb. | 27.2 | 59.4 |

## Railroad Earnings Rise Moderately; Income for Six Months Down Sharply

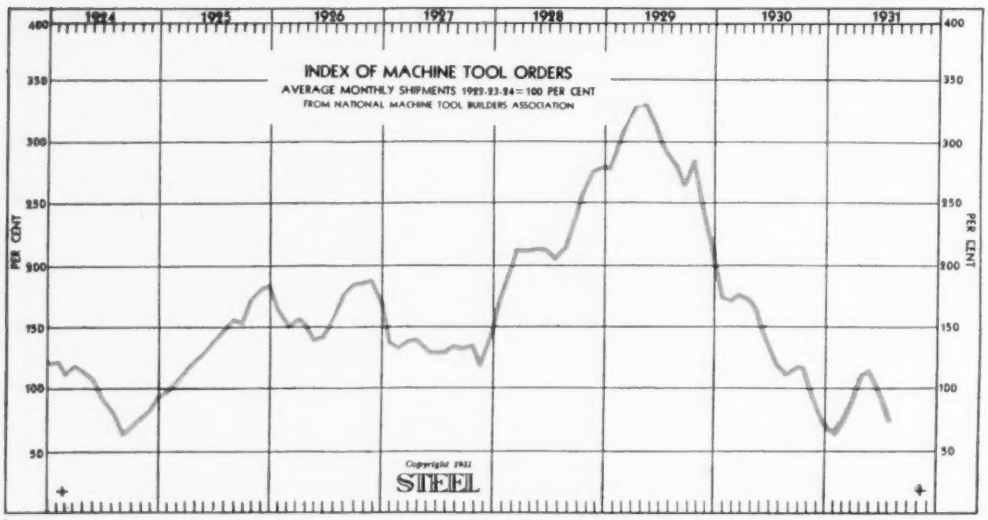
Net operating income of Class I railroads experienced a mild upturn in June, when earnings were $50,162,553, compared with more than forty-one million dollars in May and sixty-nine million in June, 1930. The rate of return on investment was 2.33 per cent. Compared with a year ago gross revenues were down 16.9 per cent and operating expenses were 16.3 per cent lower. In the first half of the year net income was $238,550,140 compared with $377,379,211 a year ago. In terms of rate of return, six months of 1931 netted 2.15 per cent, compared with 3.46 per cent. Of the 141 roads represented in the totals, 41 operated at a loss in the first half of the year.

## Backlog of United States Steel Corp. Declines for Fourth Time

Unfilled orders of the United States Steel Corp. declined 74,507 tons in July and at the end of the month were 3,404,816 tons, a drop of 2.14 per cent. It was the fourth successive decline and brought the backlog to the lowest position since the end of October, 1927. On the other hand, the April, May and June cuts all were larger, and not since June, 1929, has the decline been smaller than in July. A year ago unfilled tonnage amounted to 4,022,055, due to an increase of 53,991 tons. The relatively small recession last month accompanied the lowest operating rate of the year to date. March of this year was the last instance of a rise, the gain at that time being 30,136 tons.




| Thousand Tons | | |
|---|---|---|
| | 1931 | 1930 |
| July | 3,405 | 4,022 |
| June | 3,479 | 3,968 |
| May | 3,620 | 4,059 |
| April | 3,897 | 4,354 |
| March | 3,995 | 4,570 |
| Feb. | 3,965 | 4,479 |



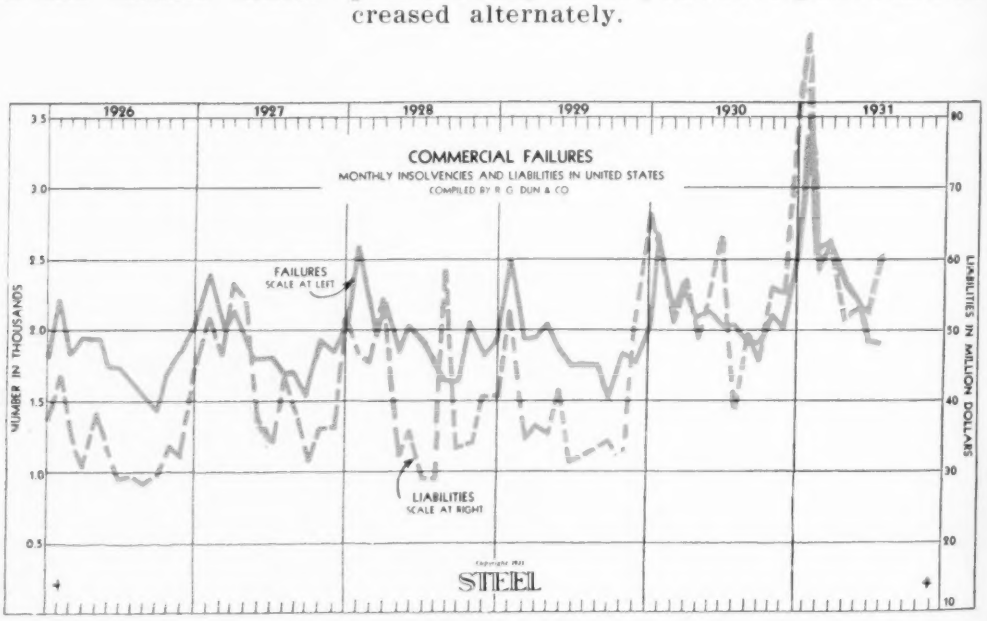

| | 1931 | 1930 |
|---|---|---|
| July | 74.1 | 117.3 |
| June | 88.6 | 146.7 |
| May | 103.3 | 165.1 |
| April | 102.1 | 176.8 |
| March | 89.4 | 177.8 |
| February | 73.1 | 172.8 |

## Moving Average of Machine Tool Orders Approaches Previous Low Record

With a moving average of 74.1, machine tool orders in July for the second consecutive time lost ground. The June index was 88.6 and a year ago it was 117.3. The three-month figure was close to the lows of 73.1 of last December and February, and 65.3 in January. Actual orders for July were in the fourth month of their decline and the actual order index stood at 61.5, with the exception of last November a new low. Among the three classes of companies reporting, declines in new actual order lows took place with the large and small companies, but an appreciable rise was marked up by the concerns of medium size. Shipments and unfilled orders both dropped.

## July Failures Again Are Slightly Lower, But Liabilities Increase Heavily

The number of business insolvencies in July once more declined from the previous month, and for the second time was under the total for the corresponding month of 1930. Liabilities, however, jumped upward sharply and were well above the liabilities invoved in July, 1930. The 1983 failures of the month resulted in default of $60,997,853. There were 1993 failures in June and 2028 in July a year ago. Money loss in June was $51,655,648 and in July, 1930 was $39,826,417. While the decrease in the number of insolvencies was small, it was the fourth in succession. Liabilities, in declining from the peak set early in the year, have gained and decreased alternately.

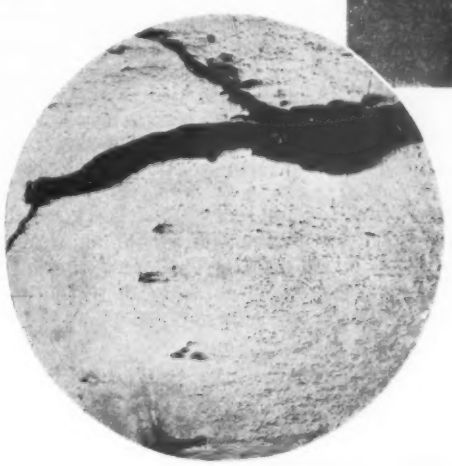



| Liabilities | |
|---|---|
| July, 1931 | $60,997,853 |
| June, 1931 | 51,655,648 |
| July, 1930 | 39,826,417 |
| **Number** | |
| July, 1931 | 1,983 |
| June, 1931 | 1,993 |
| July, 1930 | 2,028 |

# Failure of Steel in Machine Parts

By L. T. HOLT
Consulting Metallurgist

*FIG. 1 (Right)—Crack in crank web which developed from inclusions. Fig. 2 (Below)—Photomicrograph of crack shown in Fig. 1 and of smaller inclusions*



WITHOUT doubt the greatest progress of all time in scientific metallurgy has been made within the past decade. Science has delved deeply into the mysteries of metals and, while no one would say that our knowledge is in any measure complete and that the search is ended, so much has been achieved that metal efficiency has been increased vastly. When the science of metallography was discovered, making it possible to look into the internal structure of metals, a door was opened that revealed endless possibilities. And now, another door has been opened by the X-ray into the study of atomic structure. The failure of a steel object often presents a most perplexing situation. In some cases, even after the most careful designing by a competent engineer the object suddenly breaks after a comparatively short period of service. The question then is: "What caused it?"

The old idea that it crystallized and broke now is known to be a fallacy, as it is impossible for steel to crystallize while cold. The trend today is perhaps to lay too much stress upon pure fatigue when in many instances faulty steel, improper heat treatment, and machining are to blame. Some of the principal causes of failure in steel machine parts most frequently encountered are: notch fatigue caused by the formation of internal notches which are formed in turn by massed inclusions of sulphides, silicates and oxides; corrosion fatigue; insufficient heat treatment; and last, but by no means least, rough tool marks left by machining operations and the placing of keyways and fillets in objects subject to extreme vibration and reversal of stress.

PERPLEXING problems often are presented by the failure of steel in service. Notch fatigue, insufficient heat treatment, tool marks and the presence of inclusions are considered as some of the principal causes of failure by L. T. Holt, consulting metallurgist, Seattle, in this abstract of a paper presented at the Western Metal Congress in San Francisco.

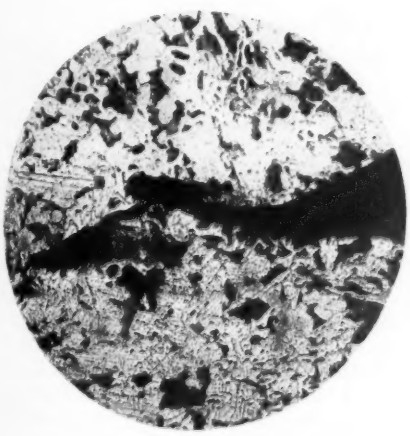


*FIG. 3 — Magnified view of one of the notches seen in Fig. 2, and the start of a small crack*

This brings up the question "Can it be proved that inclusions of nonmetallic nature, such as sulphides, silicates, oxides, etc., cause failure in steel machine members when subjected to service conditions of alternating and vibratory stresses?"

Shafts always are stressed transversely and subjected to vibration. It is doubtful whether a shaft ever was designed to be subjected to longitudinal stresses. Inclusions would run longitudinally, but stresses would be trans-

verse. Inclusions have no strength and the space they occupy is of no value to the metal.

After eleven years of service, a large six-throw crankshaft in a diesel engine suddenly revealed cracks that ran half through the section. The engine was of marine construction and, being directly connected to the propeller, the speed of revolution was not great. As the factor of safety was sufficient, it did not seem possible a failure so complete could have been caused by fatigue or sudden shock.

An examination was called for to determine the cause of failure. Tensile test specimens were taken from the broken sections, in both longitudinal and transverse directions, and also sections for macrographic and micrographic examination. The results of tensile tests were as follows:

Test No. 1, running lengthwise with the shaft:

| | |
|---|---|
| Yield point | 40,510 lbs. per sq. in. |
| Tensile strength | 73,840 lbs. per sq. in. |
| Elongation in 2 inches | 29.5 per cent |
| Reduction of area | 43.5 per cent |
| Fracture | Irregular |

Test No. 2, running across the web, transverse to the shaft:

| | |
|---|---|
| Yield point | 42,830 lbs. per sq. in. |
| Tensile strength | 66,860 lbs. per sq. in. |
| Elongation in 2 inches | 24.0 per cent |
| Reduction of area | 35.6 per cent |
| Fracture | Irregular, firey, with inclusions |

The variations between the transverse and longitudinal test are just what could be expected, an allowance being made in specifications for transverse tests due to the directional properties imparted by forging.

*Fig. 4—Photomicrograph of a section of Fig. 6, showing cracks starting at each score mark*

That the tensile test does not indicate the ability of the steel to stand up under stress is proved in this case. Here are two tests, which in a great majority of instances, would be accepted and would fulfill certain specifications for forgings of this class. In making a tensile test a steady load is applied at a uniform rate of speed, but to the shaft in actual service, unequal and sudden loads are applied, some of which may approach closely or even go slightly beyond the elastic limit of the metal under test.

A section of the crank web close to the pin is shown in Fig. 1, revealing a part of a crack which runs from the crank web to the pin. The specimen was highly polished and etched to develop the macrostructure. On close examination a great number of small notches are seen. These were originally in the metal and were not produced by the etching reagent, which is not an acid and does not produce pits. They are internal notches which were filled with nonmetallic inclusions, some of which were removed by the polishing and etching.

Fig. 2, 50 diameters magnification, shows the end of the crack and a smaller inclusion. In this instance the nonmetallic contents still occupy the notch. The specimen was not etched.

### Metal Is Overstressed

A photomicrograph, 100 diameters magnification, of the center of the web away from the large crack is illustrated in Fig. 3. This shows part of one of the notches seen in Fig. 2 and the start of a small crack. In all the cracks examined, it was seen that each had its start at an inclusion or notch, and the microstructure immediately surrounding or enveloping the inclusion or notch had the appearance of overstressed metal.

In the physical testing of steel forgings and castings, it frequently is observed that the elongation and reduction of area are considerably lower than desired—sometimes to such an extent that these elements are practically nil, although the annealing and grain size are all that could be desired. Upon examination of the fractured test piece, it often is found that there are more or less gaps or small breaks in the strain area of the metal. In faces of this sort, microexamination would reveal that there were numerous inclusions at this gap and it can be proved that the low elongation and reduction of area of the test were caused by these inclusions.

Inclusions are known as stress raisers. Their presence develops a highly stressed condition in the areas occupied by them by causing internal notches, and when rupture takes place it is known as notch fatigue. That score marks and rough tool marks also have a definite effect upon the strength of machine members subject to stresses of service, has been proved many times.

One case of recent occurrence was of a connecting rod from an internal combustion engine which broke off after a short period of service at the wrist pin bearing end. There was a locking bolt hole as seen in Fig. 5. Upon examination of a longitudinal section of the hole, it was observed

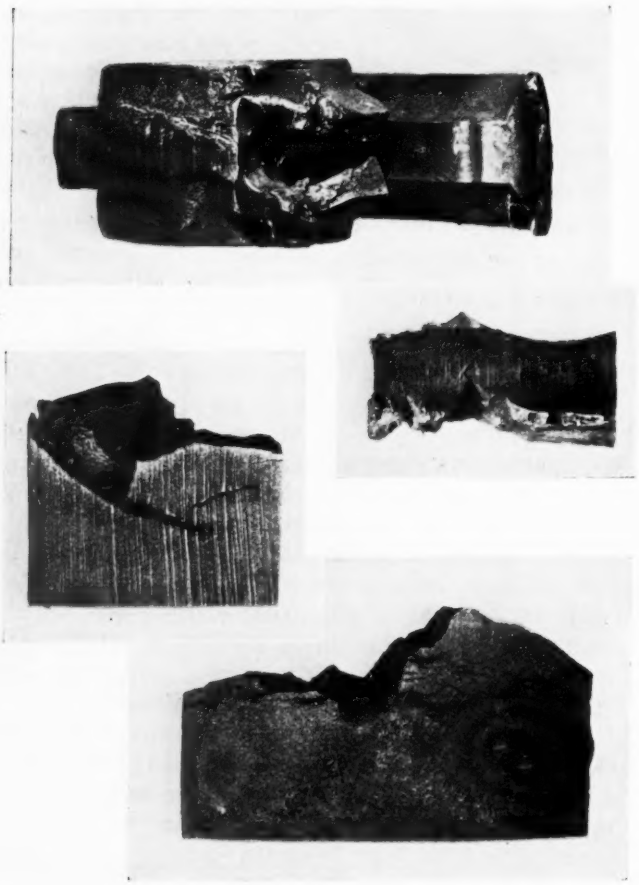


*FIG. 5 (Above) — Connecting rod which failed at bolt hole. Fig. 6 (Center Right) —Score marks on the surface of the hole. Fig. 7 (Center Left) — Ghost lines hastened failure of this propeller shaft. Fig. 8 (Below)—Salt water corrosion and reversal of stress brought about this failure*

that it had been scored by the machining operations. Fig. 6 shows that there are many score marks in this radius, and that the large notch had its start at some of these scores.

It will be seen in Fig. 4, a photomicrograph of a section of Fig. 6, that there are three score marks, and that at each is a crack running into the fracture.

Dr. Stead has stated that wherever ghost lines are present, a segregation of phosphorus is found. This statement is proved by the etching of suspected areas with Stead's reagent. It has been the writer's experience that wherever ghost lines appeared in steel forgings, sulphides, silicate, and perhaps oxide inclusions also were present.

### Contribute to Failure

A macrograph of a section taken at the fracture of a large propeller shaft that failed after a few months service is shown in Fig. 7. While the primary cause of the failure was extreme pitting by salt water corrosion, there was no doubt that the large number of ghost lines was also a contributing factor. The specimen in question first was polished highly, then etched with Humphrey's reagent of copper-ammonium-chloride, and slightly acidulated with hydrochloric acid for 15 minutes. This action is a mild one and does not pit the metal. An internal crack can be seen running across the ghost lines.

Failure due to salt water corrosion, accompanied by reversal of stress, in a marine propeller shaft in use on a vessel powered by diesel engines is illustrated in Fig. 8. This is part of the fracture and outside diameter. The location is at the propeller end where the shaft was subject continually to the action of salt water. Grooves seen in this illustration were caused by salt water attack, augmented by the rotating action of the shaft when in motion.

This shaft failed after less than a year of service. It is conceded by all who have investigated the phenomena of corrosive attack accompanied by stress and motion that the corrosive action always is intensified by the motion and stressing. The variation of speed of the ship's propeller, due to the rolling of the vessel, caused unevenness of stress. This, in combination with sea water attack, doubtless was the cause of failure.

An example of fracture in cast steel whose structure was made up of dendrites of crystallization is shown in Fig. 9. This specimen was taken from a large steel casting. Cracks developed on the outside, and an examination was made to determine their depth. At one crack a hole was drilled, part of which is seen at the upper left of the illustration. The specimen was machined out, polished, and etched with copper-ammonium-chloride to develop the macrostructure. The crack starting at the drilled hole is shown running down into the metal. A tensile test proved the metal to be high in tensile strength and lacking ductility entirely.

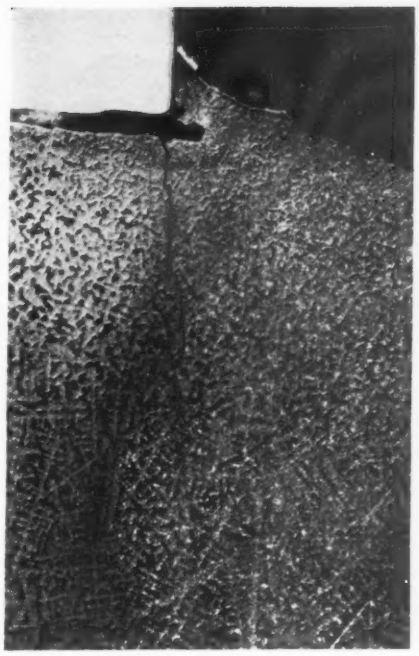


*Fig. 9—Fracture in cast steel whose structure was made up of dendrites of crystallization*

## Annealing Furnaces Handle 18-Foot Pipe Lengths

Due to change in plans the large pipe annealing furnaces which have been installed at the Burlington, N. J., plant of the United States Pipe & Foundry Co. will not be put in operation this month as originally scheduled. The design of the furnaces at Burlington follows in general principle the new furnace installed by the United States Pipe & Foundry Co. at its Birmingham, Ala., plant in 1928. This furnace is 54 feet long and wide enough to accommodate 18-foot pipe. It has a maximum rated heating capacity of 26 tons of pipe per hour in diameters from 4 to 12 inches. Pipe is rolled through the furnace on a slight upward incline by means of two parallel chains equipped with heat-resisting alloy pushing fingers of special design. Six parallel lines of staggered alloy skid rails form the support, and thus minimize the danger of bowing or distortion. In previous designs the pipe to be annealed rested on two lines of rollers and some difficulty with bowing was experienced.

In the new furnace design, due to the fact that the skid rails and pushing fingers reach the same temperature as the pipe, there is no danger of cold spots on the pipe at such points of contact, and therefore the furnace can be operated at slightly lower tempeatures than used with former furnaces.

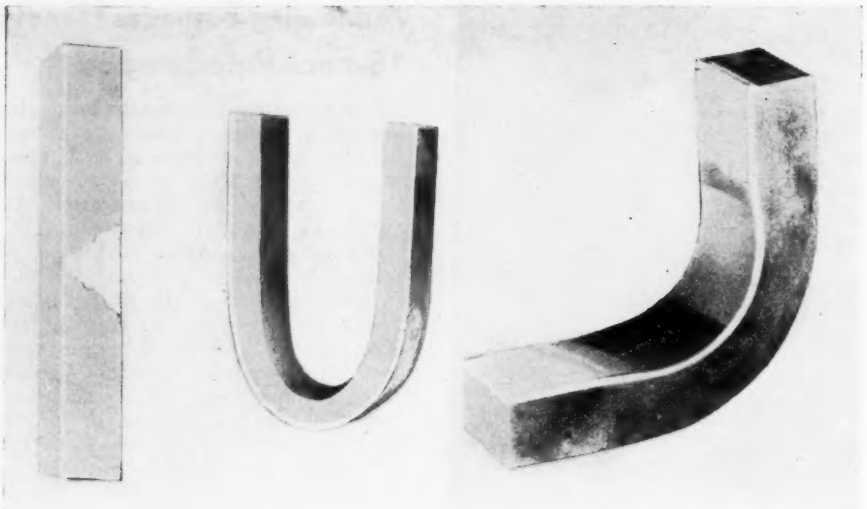
# Charging of Blast Furnaces Now Controlled Automatically

AUTOMATIC control of blast furnace charging operations, a comparatively new development in auxiliary operating equipment, is gaining favor in this country. Stacks equipped with charging control include one each at the Illinois Steel Co., Gary, Ind., Wisconsin Steel Works, South Chicago, Ill., Ford Motor Co., Fordson, Mich., and the American Steel & Wire Co., Cleveland, and two at the Youngstown Sheet & Tube Co., Indiana Harbor, Ind.

### Control Is Synchronized

The control system, designed by the Freyn Engineering Co., Chicago, includes a control panel, motor-operated valves for controlling the bell hoist, air cylinders and interlocking equipment for co-ordinating and sequencing the operation of the skip, revolving distributor, small and large bells and stockline recorder. The bell hoist is operated by two air cylinders which are supplied with air from the cold blast main. The control panel causes the small bell to operate for each trip of the skip and causes the large bell to dump at predetermined points in the round. Selector switches for selecting the points in the round at which it is desired to dump the large bell are mounted at the bottom of the panel.

The skip operator merely deposits the materials in the skip tub and starts it up the incline. All remaining operations involved in getting the material into the furnace are automatic. Each operation not only is sequenced but is interlocked so that it can and must perform only in sequence. Lamps in a target indicate the number of skip loads of material that are on the large bell at the moment. These targets are located in the stockhouse, casthouse and skip engine room. The equipment compels the scale car operator to maintain the burden level at the desired height, to fill the furnace regularly and to fill it with the proper materials in the correct sequence.



*Typical fabrication weld (left) of composite metal. A 180-degree cold bend test on ½-inch material (center), with corrosion-resisting alloy ply on inner and outer surfaces. A 90-degree test cold bend on 1-inch material (right) with alloy ply on inner radius*

# Corrosion-Resisting Surface On New Composite Metal

CORROSION-RESISTING steels —the high-chrome, high-nickel ferrous alloys and the chromium irons—undoubtedly have revolutionized industry's concept of preventing the destruction of equipment through rust, corrosion or oxidation. Even with the high cost of the corrosion-resisting alloy metals, their use has been widespread, and the results such as to have established them already as standard materials of construction for anticorrosive service and use in equipment where high temperatures are involved.

### Seek To Avoid High Cost

Their high cost has been a partial handicap, even where the economic desirability was greatest, and especially in application of the corrosion-resisting metals to the larger fabrications where heavy plates are required. To offset this cost factor Industrial Welded Alloys Inc., 225 Broadway, New York, has been conducting extensive research work which has culminated in the development of a material known as Plykrome, a composite metal in which corrosion-resisting steel is veneered and completely weld-bonded to a mild steel slab, and then rolled on a mill to form an integral plate or sheet.

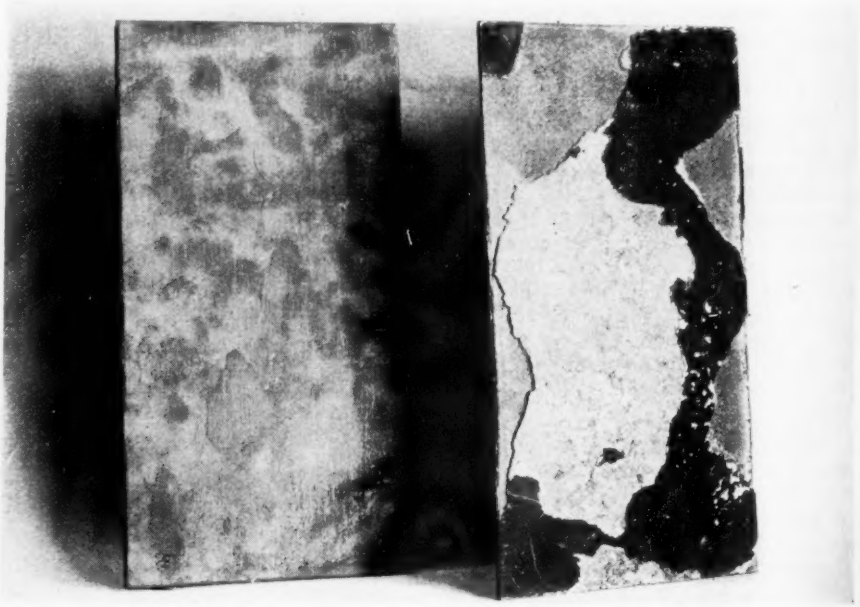
As early as 1927 this company undertook experiments with corrosion-resisting steel linings for tanks and other equipment to effect a maximum economy of the expensive metal. Where use of equipment involved temperature changes, trouble subsequently developed. With either a floating liner or one practically welded to the steel body, the difference in the coefficient of expansion of steel and of alloy invariably resulted in difficulties. Plykrome is claimed to overcome the disadvantages of the corrosion-resisting steel liner.

Many problems were encountered in the development of this veneered steel. Oxidation, the greatest detriment to welding, had to be prevented. The weld between the two materials had to be so constructed as to permit the expansion of the alloy under the influence of increased temperatures without breaking its bond with the steel. Welding had to be accomplished at controlled temperatures which would be effective with the alloy metal but not harmful to the mild steel. Complete process patents are now pending.

### Special Welding Procedure

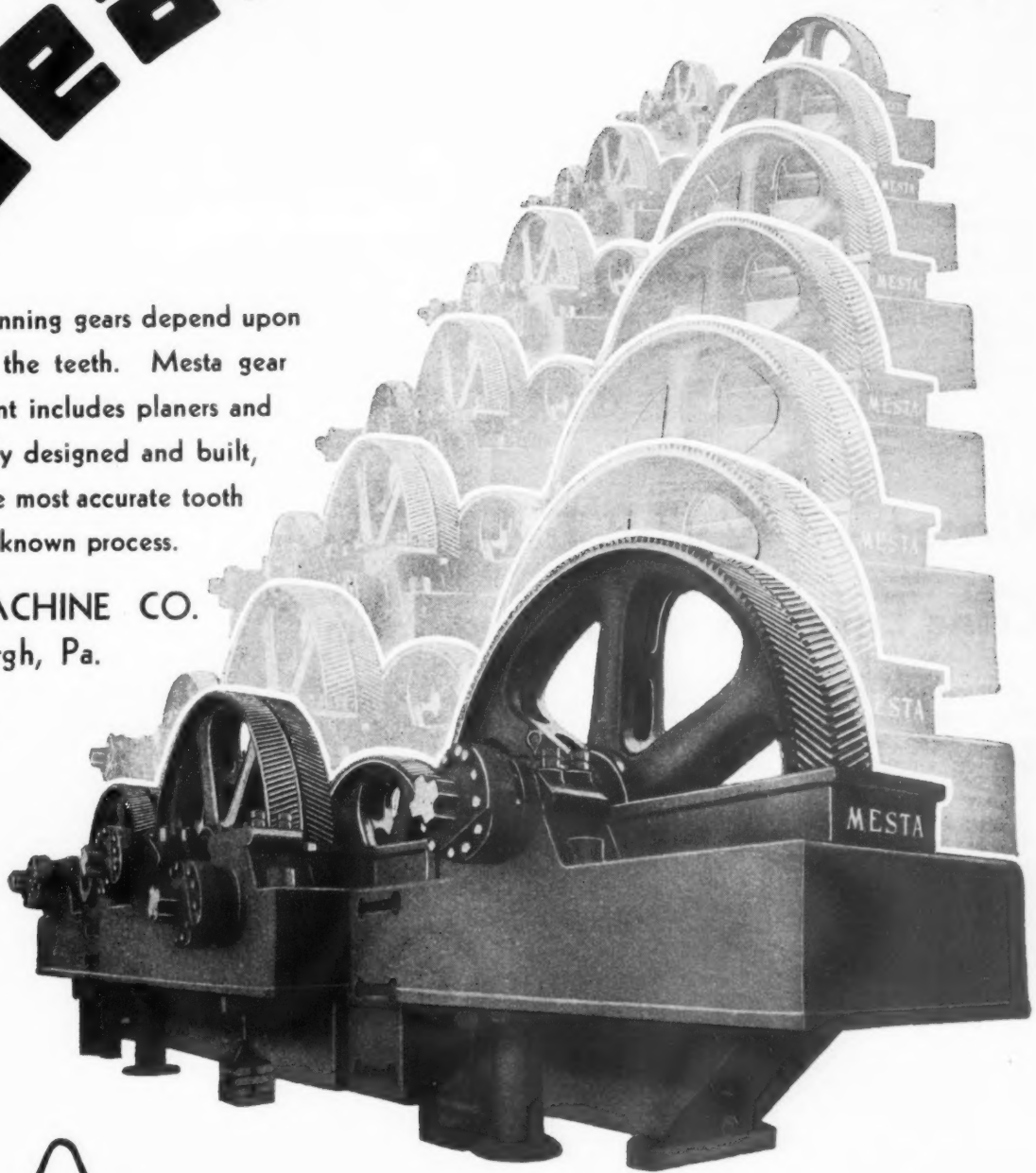
In the manufacture of this new material a plate of the corrosion-resisting alloy of predetermined thickness is welded by a special process to the steel slab, billet or bloom, before rolling. It is then rolled in accordance with usual mill practice into plates, bars, sheets, etc. The alloy surface then is sandblasted, pickled or polished, depending upon the use for which it is intended. Equipment fabrication is to be done exclusively at the Industrial Welded Alloys plant, following the special alloy arc welding process developed by that company in their handling of chrome-nickel steels, and the recognized practice for welding the mild steel backing. Butt welding suffices for 90 per cent of the construction requirements and takes the form of a typical weld as shown in one of the accompanying illustrations.

Physical tests demonstrate that the metal can be handled, bent, drawn, spun or flanged without cracking or parting the alloy from



*A specimen of 18-gage Plykrome, exposed for a period of weeks to heating to 1600 degrees Fahr. in a gas-fired furnace, then cooling and heating again. The corrosion-resisting surface (left) shows the 18-8 alloy unaffected. The mild steel backing (right) has oxidized and flaked away practically to destruction*

# Gear Drives




Silent, smooth running gears depend upon the accuracy of the teeth. Mesta gear cutting equipment includes planers and hobbers, specially designed and built, for producing the most accurate tooth possible by any known process.

MESTA MACHINE CO.
Pittsburgh, Pa.

# Mesta

the steel. The oxidation test, also shown in an accompanying illustration, while made primarily to measure the resistance of the relatively thin alloy veneer to high temperatures, is evidence of the good bonding of the two metals.

The ratio of alloy thickness to that of the sheet or plate is variable, the manufacturer pointing out that steel strip 0.010-inch thick with an alloy ply of 0.00125-inch has been rolled successfully. Present practice is to recommend a ratio of approximately 1 to 15 and in the case of heavy pressure vessels where plate 1 inch or more in thickness may be required, ratios up to 1 to 30. The metal can be made with the alloy ply surface on either side of the steel backing or both. A single surface satisfies requirements of most present industrial equipment where the material is applicable.

### Higher Ultimate Strength

A notable advantage of the corrosion-resisting alloys is their greater tensile strength. In the composite steel the increased ultimate strength is considerably greater than the proportionate thickness of alloy ply. One series of recent tests disclosed that, while the total thickness of the plate was increased 7 per cent by applying a veneer of alloy, the ultimate strength was increased 25 per cent. Furthermore since only a small percentage of the total metal thickness is alloy steel, the composite sheet or plate can be handled after the methods common to the fabrication of ordinary steel, as, for instance, cutting with an acetylene torch, cold bending and the like.

This new composite metal has been and can be produced with its corrosion-resisting alloy component of any desired analysis—14-18 or 28-30 per cent chromium, 18-8 or 25-20 per cent chrome-nickel, nichrome, hasteloy, and others.

### Numerous Applications

Oil industries, pulp and paper plants, chemical manufacturing and process industries are expected to be prominent users of Plykrome, as an aid to eliminating present losses due to corrosion of equipment. Automotive and other industries which have found chromium plating only partially effective will discover a valuable material in this veneered steel with an impervious polished alloy surface, it is claimed. Use of the material in hulls for ocean-going ships also is suggested.

Officers of Industrial Welded Alloys Inc., sponsoring the development of the new metal, are: President, Wallace C. Johnson; vice president and treasurer, Donald A. Campbell.

# Riveted and Welded Traveling Gantry Crane Equipped with Luffing Boom

A TRAVELING gantry crane with luffing boom has been installed at a dock in East Tampa, Fla., for handling sulphur from steamer to storage pile and into cars. The crane, designed and built by the Cleveland Crane & Engineering Co., Wickliffe, O., spans 80 feet of trackage and storage space. Its luffing boom, when horizontal for unloading vessels, as shown in the accompanying illustration, has an effective reach over the water of 44 feet. A maximum lift of the 3-cubic yard bucket of 34 feet above the dock floor affords a large storage capacity under the crane.

The luffing boom is raised into almost a vertical position to clear ships while docking. Each tension member between the top of the A-frame and the end of the boom has a flexible joint which allows these members to fold when the boom is being raised. A 30-horsepower motor drives two hoisting drums, installed near the top of the A-frame, which raise the boom by wire cables attached to each boom girder.

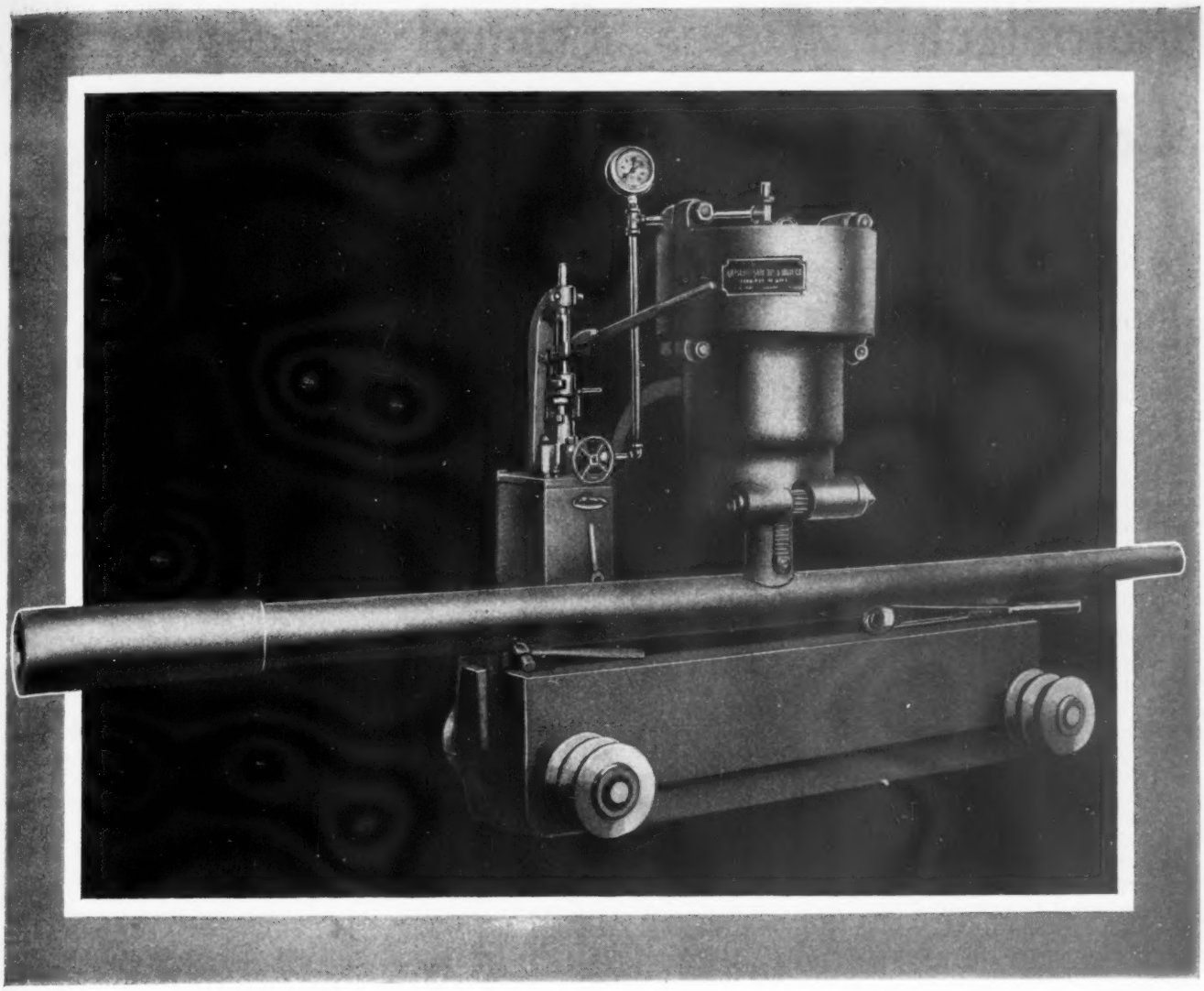
The crane has a rated capacity of 7½ tons. Overall height is 77 feet and overall length with boom in a horizontal position is 150 feet. In erecting the crane all riveted field connections also were arc welded to insure permanent alignment and impart additional strength and rigidity to the structure.

## Committee Will Study Grain Sizes in Steel

Committee E-4 on metallography of the American Society for Testing Materials, through chairman C. H. Davis, assistant metallurgist, American Brass Co., Waterbury, Conn., has summarized the major projects now under way in the field covered by this committee. Subcommittee IV on photography is making a thorough study of lens combinations in order that definite recommendations may be offered and ultimately published. This group also will attempt to formulate a definition of the word "macrograph" as there is some feeling that this term should include magnifications up to 20 or 25 diameters.

A special committee on grain characteristics of steel was organized after the March, 1931, Pittsburgh meeting. The first thought was to study grain sizes of steel, but as a result of a discussion during the annual meeting of the society in Chicago it was decided to enlarge upon the scope of the committee's work to include the spheroidizing of tool steels, a work which had been initiated in 1929. H. A. Anderson, Western Electric Co., Chicago, who had been in charge of the work on spheroidizing, proposed that his efforts be joined with those of the committee on grain sizes. The combined committees, therefore, were given a new name—special committee on grain characteristics of steel.

In a general way the outline of procedure includes the preparation of grain size charts for carburizing steels, for forging steels, and then for tool steels.



# *precision and the press*

Accuracy and precision trip close to the heels of profound thought . . . *thought* of a constructive nature that when imbued with liberal practice is most resultant in the perfection of a workable product.

Skill in truing gun barrels rests not alone with the artisan, for his tools must possess the qualities of *precision* and *accuracy*. Appointment through these merits equipped the Watervliet Arsenal with the Birdsboro hydraulic, shaft and gun-barrel straightener —illustrated with a gun of $3\frac{3}{4}$″ bore and of 12′-9″ length. Block of press being shown with grooved wheel mounting adaptable to the ways of a 36″ lathe—permitting travel over central section of work.

Yours may not be the problem of the arsenal, though exactness warrant Government procedure . . . To design and build hydraulic machinery to the requirements of the many—has long been Birdsboro's task . . . To have conducted a business as such—is to have fortified our ability against the seemingly impossible.

**BIRDSBORO**

**STEEL FOUNDRY AND MACHINE COMPANY**

**DESIGNERS AND BUILDERS**

**BIRDSBORO, PENNSYLVANIA**

NEW YORK CLEVELAND CHICAGO PITTSBURGH

# Photoelectric Tubes Control Sheet Mill Runout Tables

BY A. F. BOWERS

General Electric Co., Philadelphia

INTERESTING from the standpoint of control are runout tables recently placed in operation in connection with a new jobbing sheet mill of the Worth Steel Co., Claymont, Del. These tables, which convey the normalized sheets from the straightening rolls to the shears, utilize photoelectric relays as limit switches and constitute another successful application of the vacuum tube in the steel mill.

### Table Speeds Synchronized

As will be recognized from the accompanying illustration, the tables differ in many way from usual construction. They were designed by engineers of the Worth company and built by the McCarter Iron Works, Norristown, Pa. The several tables in the train are synchronized and run at exactly the same speed to prevent slipping and resultant scratching of the sheets in the transfer from one table to the next. From the general layout of the tables it will be noted that because of space limitations, it was necessary to reverse the direction of the sheets through the mill.

Operation of the equipment is entirely automatic after once being started, the movements of the sheets being out of the operator's hands after they leave the straightening rolls. The sheet, upon passing through the straightening rolls, travels to the end of the tilting table *B* where it passes between a photoelectric relay and its light source. This relay stops the motors driving the rolls of the runout table *A* and tilting tables *B* and *D* and starts the tilting motion.

Tables *B* and *D* tilt until their rolls are below the level of the crossover table rolls *C* and are stopped in this position by limit switch. The sheet now rests on the rolls of table *C* and is clear of the rolls of table *B*. This same limit switch starts the roll motors of the crossover table *C* and moves the sheet away from the area occupied by the intersection of table *B* and *C*.

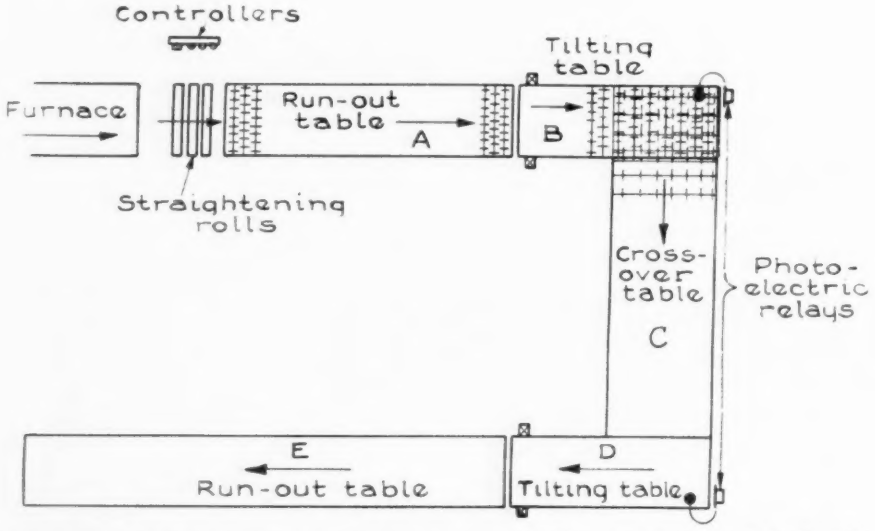
### Two Sheets on Crossover

Table *C* is sufficiently long to accommodate two sheets between tables *B* and *D*, hence, before the equipment becomes automatic, two sheets must be placed on the crossover table. The operator accomplishes this by turning out the light source for the photoelectric relays until the first two sheets reach the proper position.

Assuming that these two sheets have been properly located on the crossover table between tilting tables *B* and *D*, the transfer of the third sheet upon table *C* and the movement of table *C* sufficiently to clear the crossing of tables *B* and *C* places a sheet between photoelectric relay located on table *D* and its light source.

This relay stops the crossover table motors and starts the tilting table lift motor, bringing the rolls of the tilting tables to a position above the crossover rolls. A limit switch stops the tilting tables in this position and starts the roll motors of tables *A*, *B* and *D*. The sheet on table *D* then runs out to the shears on table *E*. Thereafter, when a new sheet enters table *B* the cycle repeats itself.

Photoelectric relays were used on this installation because the sheets which are rolled in this mill are too thin to operate mechanical limit switches.




*Arrangement of sheet mill runout tables automatically controlled by photoelectric tube relays*

## Rare Metal Thallium Is Finding New Uses

Thallium, one of the rare metals which has come into commercial use in recent years, is now finding application in a number of fields, according to the bureau of mines, Washington. Its comparative scarcity, combined with a resemblance to the common metal lead, have retarded the development and its production still is measured in pounds.

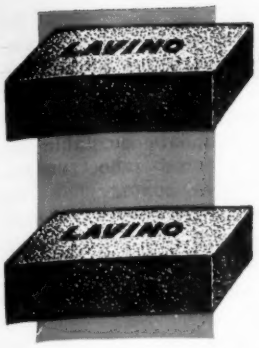
Physical and chemical properties of thallium are similar to those of lead. The metal is white with a bluish-gray tinge, somewhat paler than lead. It has a bright metallic luster when freshly cut, but dulls quickly when exposed to air. Thallium is softer than lead; it can be scratched by the finger nail and is easily cut with a knife. It is malleable, but has little tenacity and can be squeezed but not drawn into wire.

### Melting Point Raised

Alloys of lead and thallium are somewhat unusual in that they have higher melting points than either the component metals; they are used in rather small quantities in special types of electrical fuses. An alloy containing 10 per cent thallium, 20 per cent tin and 70 per cent lead is resistant to the corrosive action of mixtures of sulphuric, nitric and hydrochloric acids. Experiments indicate that the addition of thallium to lead-base alloys markedly improves their resistance to deformation.

Because of their high refractive power, thallium compounds are used in the manufacture of certain kinds of optical glass in which a high refractive index is required. The oxysulphide of thallium is used in the "Thalofide" cell, which is more sensitive to light, especially that of low intensity and long wave length, than the selenium cell. Its electrical resistance drops 50 per cent on exposure to a quarter-foot candle. Thallous chloride has found use in tungsten lamps to prolong the life of the filament.

Complete details of the element are given in information circular 6453 to be obtained from the bureau of mines, department of commerce, Washington.



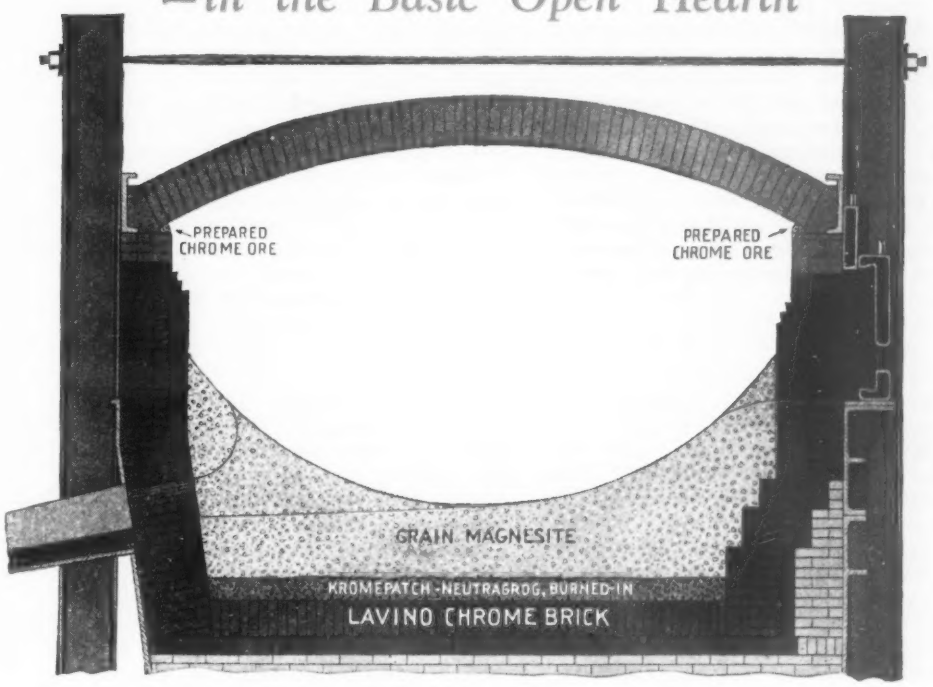

# "IMPROVED" Lavino Chrome Brick

## —in the Basic Open Hearth

Prior to 1920, the use of Chrome Brick in basic open-hearth furnaces was confined almost exclusively to one or two courses between the silica and magnesite brick in the front and back walls and a few other parts where it was considered necessary to have a neutral refractory between acid and basic refractories.

Lavino Chrome Brick during the past ten years have revolutionized the construction of basic open-hearth furnaces. Today, leading steel companies are building their furnace bottoms, front and back walls with Lavino Chrome Brick.

Many Lavino Chrome Brick bottoms have been in service over nine years and are still giving excellent performance.




Economical applications of "IMPROVED" Lavino Chrome Brick in bottoms, front and back walls—and a monolithic layer of Kromepatch-Neutragrog between the Chrome Brick and grain magnesite.

*Now we offer you a brick of still greater quality, namely, the "IMPROVED" Lavino Chrome Brick.*

"IMPROVED" Chrome Brick crack and spall much less than magnesite brick or any Chrome Brick previously made.

Expansion is about half the expansion of magnesite brick. This means that tighter joints can be used without causing distortion and buckling.

Resistance to the molten silica wash from walls and roofs is far greater than any magnesite brick. This reduces repairs at the base of front and back walls.

"IMPROVED" Lavino Chrome Brick do not hydrate or slake, while all magnesite brick disintegrate very rapidly in the presence of moisture and will slake to a fine dust. It is very rare that a magnesite brick hearth is taken out of a basic furnace and used over again in brick form, because they are usually broken down to a fine powder.

This disintegration of magnesite brick is particularly serious along the front walls where there is usually some leakage from water-cooled doors or door frames.

Chrome Brick resist the action of basic slags and fluxes, equally as well as magnesite brick.

The hot load strength of "IMPROVED" Lavino Chrome Brick is greater than magnesite brick. Ordinary Chrome Brick have much lower hot load strength than magnesite.

***The saving in first cost is between $65.00 and $70.00 per thousand, in favor of Chrome Brick. A better product for less money.***

***Consult one of our refractories engineers on all new applications of IMPROVED Lavino Chrome Brick. Our men are trained to recommend only applications which can be supported by laboratory or performance records.***

**E. J. LAVINO AND COMPANY**
REFRACTORIES DIVISION
CHROME, MAGNESITE AND SILICA REFRACTORIES
BULLITT BUILDING PHILADELPHIA

*"Pioneers in Chrome Refractories"*

# Roll Heater Operates on Induction Principle

IT IS well known that when rolling hot sheets or tin plates the rolls naturally will be hotter in the center of their surface than toward the ends. This characteristic is due to most of the work being carried out in the middle portion of the rolls and also to the cooling effect of the housings. To insure that the rolls shall be cylindrical during actual rolling, they must be turned or ground concave when at normal air temperature so that they will attain ultimately a true cylindrical form after expansion by hot working.

### Various Methods in Use

Various methods are in use for bringing up the rolls to working temperatures. These methods include rolling of narrower strip until the rolls have acquired sufficient temperature near their centers to enable wider sheets to be rolled; the use of gas flames played on the surface while the rolls are revolving prior to rolling sheets; or the use of electric resistance heaters surrounding the rolls. In the latter case the rolls are stationary during preheating.

The ordinary sheet or tin plate roll has a chill from $\frac{5}{8}$ to $\frac{7}{8}$-inch thick, which is hard and brittle. The entire center portion of the rolls, including the necks and wobblers, is gray iron cast in sand and cooled slowly to permit the carbon to assume a graphite form. In this composite roll structure is to be found the principal cause of roll failure. The chilled outer portion of the roll, having twice the expansion rate of the inner gray iron, tends to pull away from the gray iron when the roll is heated up from the surface.

These conditions would exist to some extent were the rolls uniformly heated, but are worse when a high temperature is applied to the outside, resulting in a steep temperature gradient from outside to inside of the roll. For this reason preliminary heating of a roll to the temperature necessary for rolling hot sheets is of vital importance.

Another difficulty frequently responsible for roll failure arises in the casting process as a result of the stresses set up in the roll during cooling. These stresses may be and likely are unequal in different parts of the roll. Oponion is divided on the desirability of attempting to relieve casting stresses in the foundry; however, it is generally accepted that any attempt to relieve strains by applying heat from the outside is likely to aggravate the condition.

### Heating by Induction

Realizing the dangers of breakage often involved in heating rolls by the usual methods and in order to make use of a principle of preheating which does not require the application of heat externally to the roll, an electric induction heater, which creates the heat in the roll interior, has been developed and patented. This heater, although remaining cool itself, gradually raises the temperature of the roll without producing a steep temperature gradient between the surface and the center and also builds up the heat in the correct proportions from the middle to the ends, accurately copying the normal heat distribution and gradually bringing the roll to the correct shape for rolling sheets. The heater has been used extensively in Europe where in spite of high power costs, results have been highly satisfactory. Manufacture and sale of the device in this country are controlled under license by the Wean Engineering Co. Inc., Warren, O.

The principle of induction roll heating consists of surrounding the pair of rolls with a coil of wire through which an alternating current flows. The coil induces currents in the mass of metal contained in the rolls, and the currents in turn elevate the roll temperature by hysteresis.

Fig. 1 shows an induction roll heater with the connecting cables open, being lowered into position. Fig. 2 shows the heater with connections closed, applied to the mill.

The heater is made up of copper bar wound on edge with the undersides connected by flexible leads, the whole being braced together, insulated, and supported on two rods placed over the rolls. The rolls are covered with asbestos sheet to reduce radiation losses and to protect the heater from the heat of the rolls. As all coil connections are made by tightening one bolt, the heater can be put on or taken off in about 5 minutes without disturbing any of the permanent mill fixings.

### Low Voltage Required

For economical operation these heaters should be supplied with current at comparatively low voltage. A transformer for stepping the current down to about 100/120 volts, is normally required. Each heater takes approximately 50/60 kilowatts to raise the temperature of a pair of rolls 42 inches long x 30-inch diameter to 572 degrees Fahr in 12 hours, consuming, therefore, 600/720 kilowatts, the necessary transformer capacity being 100/120 kilovolt-amperes.

The heaters are used on a 60-cycle system but can be arranged for 40 or 50-cycle systems. They have not been used on a 25-cycle system, as the heating effect is smaller due to the lower frequency.

The curve at the left of the chart shown on Page 41 records the temperature rise of a pair of rolls of

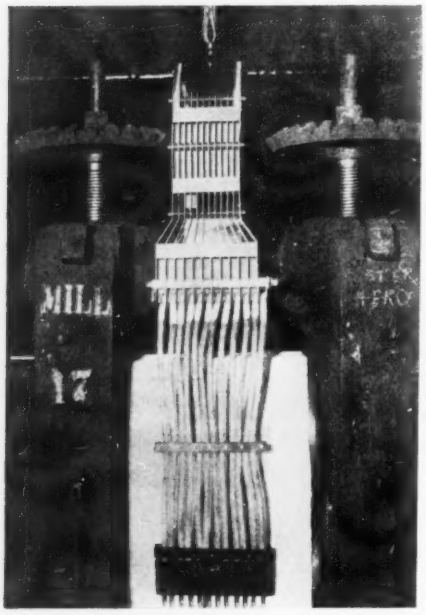


*Fig. 1—Induction roll heater, with connecting cables open, being lowered into position*

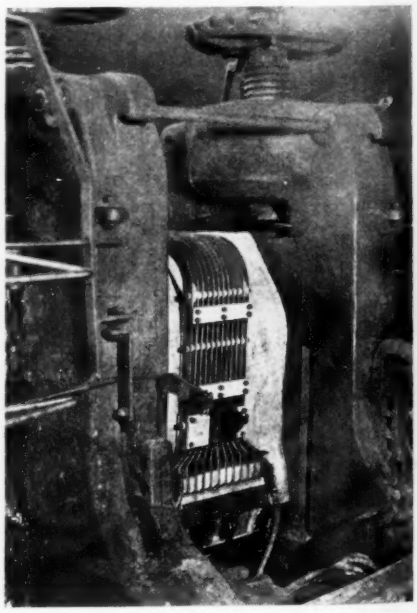


*Fig. 2—Induction roll heater, installed on a mill, ready for operation*

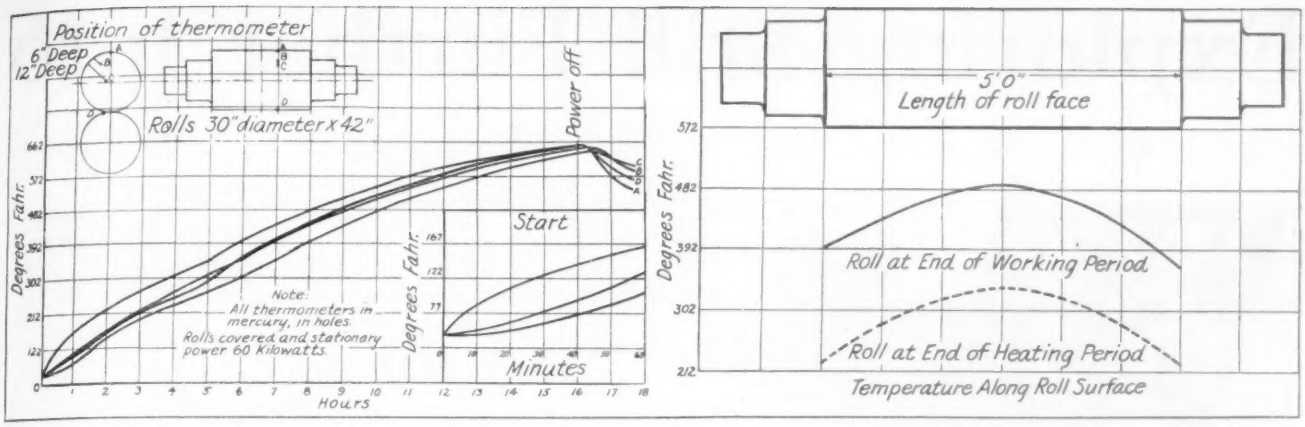



*Fig. 3—Chart showing temperature rise (left) as roll is heated by induction heater. Comparison of heat distribution in the heated roll and a roll at the end of a working period is shown at the right*

30-inch diameter x 42-inch length. Holes were drilled to various depths in the roll and temperatures taken to show the heat distribution in the roll and illustrate the small temperature gradient between surface and center. The temperatures are also equal on both rolls around the surface of the roll at corresponding distances from the middle without revolving the rolls to get even heating.

The curve at the right shows the natural temperature fall from middle to end of rolls under working conditions, also the corresponding gradient produced by the electric induction heater. A study of the chart shows how closely this shape copies the natural one.

With electric induction heaters the entire working cost is for power. No attendance, no power for revolving the mills, and no power or attendance for auxiliaries are involved. The heaters are switched on a given number of hours beforehand and left in the knowledge that the desired results will be obtained automatically.

The usual method of operation is to start heating on Sunday evening and to continue for 12 hours. In many cases a reduced power rate can be obtained at this time, so that the cost of current is not high.

The builder of the equipment summarizes the advantages of induction electric heating as follows: The roll is brought up to the required temperature gradually by heat created in the roll itself, the temperature at the center being increased at the same time as that at the surface and the stresses due to a steep temperature gradient thus are avoided.

Foundry stresses are relieved when the new roll is first heated and the desired distribution of temperature between the middle and ends is attained before subjecting the roll to rolling shocks. Normal production is started at once; no narrow iron need be rolled and the production on warming-up turn is as high as the production on any other turn.

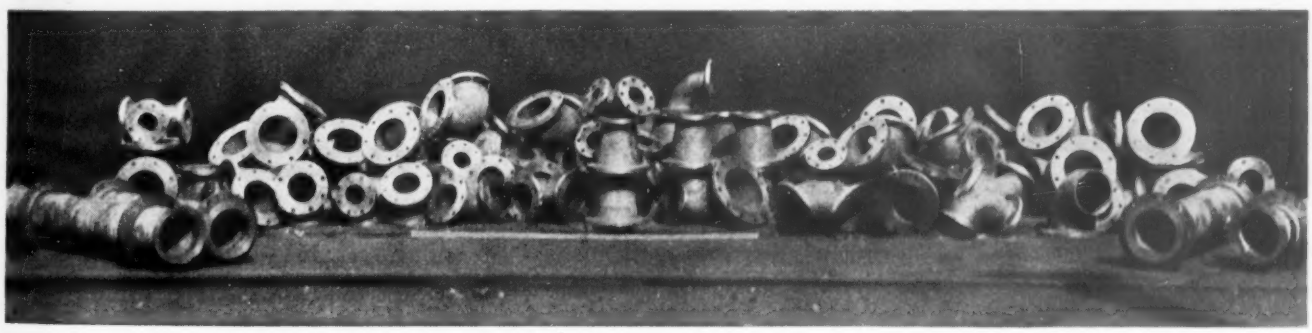
One or more pairs of spare rolls can be kept hot in separate stands for immediate use in the event of a change of order, or an accidental breakage, with the same plant that is used for ordinary heating working at reduced power.

The rolls are covered to prevent loss by radiation and thus are protected from cold air currents. The mill train always starts hot and thus power is saved by the reduced mill friction.

The process is clean, there are no fumes, smoke or steam, and as the induction heating has a demagnetizing effect on the rolls, there is no possibility of the rolls picking up iron particles which might damage material being rolled. Since the electric power for heating is used at times of "off peak" loads, the current usually can be had at low rates.

## Automotive Engineers To Meet at Metal Congress

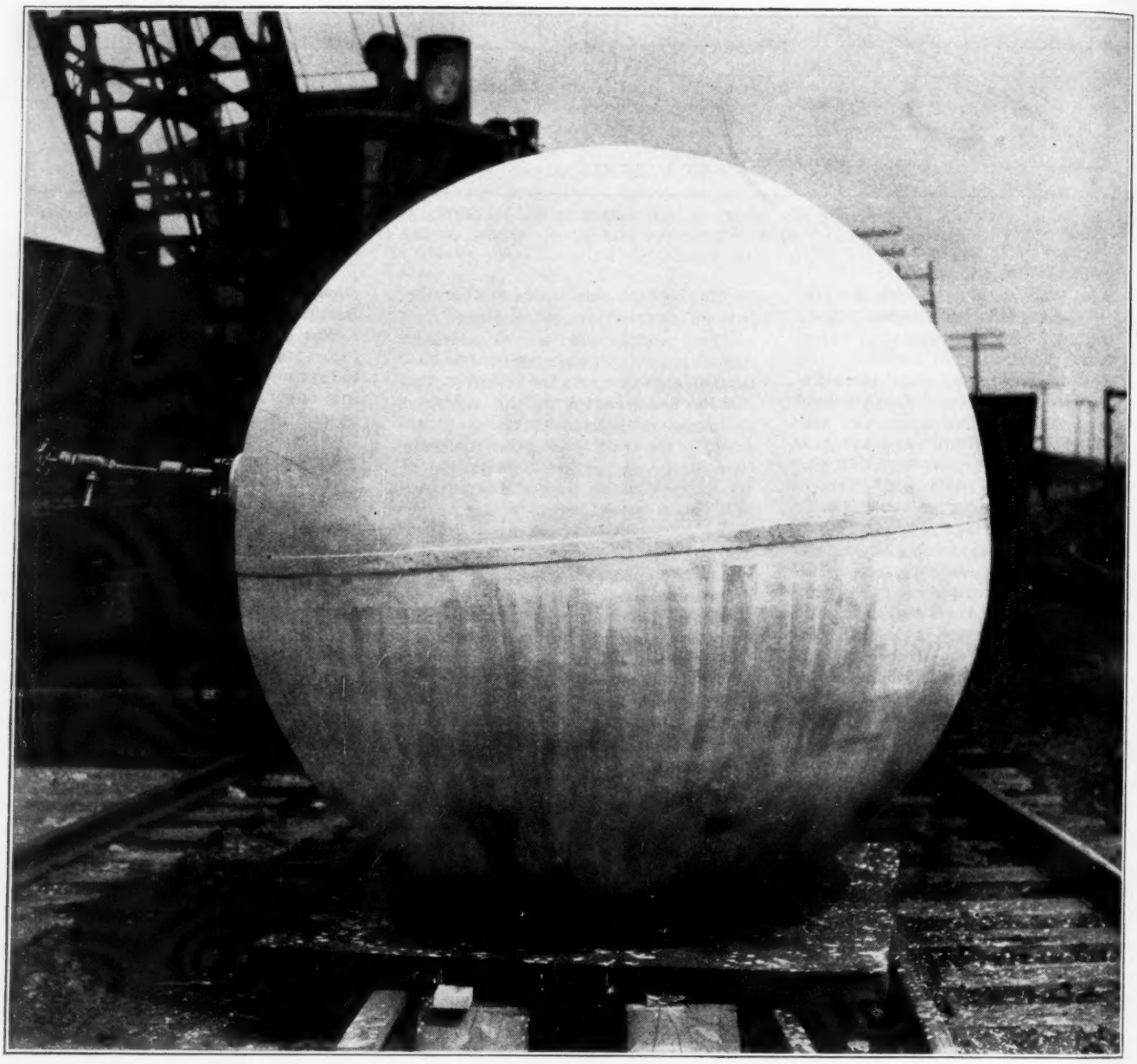
Announcement has been made that the Society of Automotive Engineers has arranged to meet in Boston Sept. 21-25 in conjunction with the National Metal congress and exposition. R. S. Burnett, manager of standards of the society, has scheduled a session Wednesday morning, Sept. 23, at Hotel Statler, dealing with problems of the automobile industry from the standpoints of metallurgy, production and cost. Members of the automotive engineers' society also will attend the sheet steel and corrosion-resisting alloys sessions to be held by the American Society for Steel Treating during the congress.



*CENTRIFUGALLY MADE CASTINGS OF HEAT AND CORROSION-RESISTING ALLOYS*

*By the use of the centrifugal casting process the Babcock & Wilcox Co., Barberton, O., is producing hollow cylindrical castings said to be superior to those cast in sand, yielding a nonporous metal of even wall thickness and close uniform texture. The process lends itself to the productioin of heat-resisting alloy tubes and other metals difficult to pierce. It also has been used successfully on 18 and 8 and other corrosion-resisting alloy steels. Equipment operated by the company will produce castings from 4 to 12 inches outside diameter, 12 feet in length and with minimum wall thickness of 3/8-inch*

# Exploring Still Further Into



## A. O. SMITH CORPORATION

*General Offices: Milwaukee, Wisconsin*

PRESSURE VESSEL DIVISION

# SMITH WELDED

THERE ARE NOW MORE THAN 1500 IN SERVICE

# the Actual Factor of Safety

## *Results of Test Made on Chrome-Vanadium Sphere,* SMITHWelded *for the U. S. Navy by A. O. Smith Corporation — May 15th, 1931*

**This test was made as part of development work on spherical pressure vessels to be used in connection with storage and transportation of Helium Gas for the U. S. Navy.**

**The vessel was a sphere, 94 inches I. D. — $1^{11}/_{16}$ inches minimum wall thickness. It was formed in two halves which were joined by a continuous circular SMITHWeld. It was one of three made for the Navy and was selected at random for this test by a Navy Inspector. The details of the test follow:**

*Repeated Hammer Test:*

**The vessel was hammered continuously with air hammers for 75 hours while under a pressure of 2,360 pounds per square inch. Over 35,000,000 blows were struck, each with a measured energy of 5 foot pounds.**

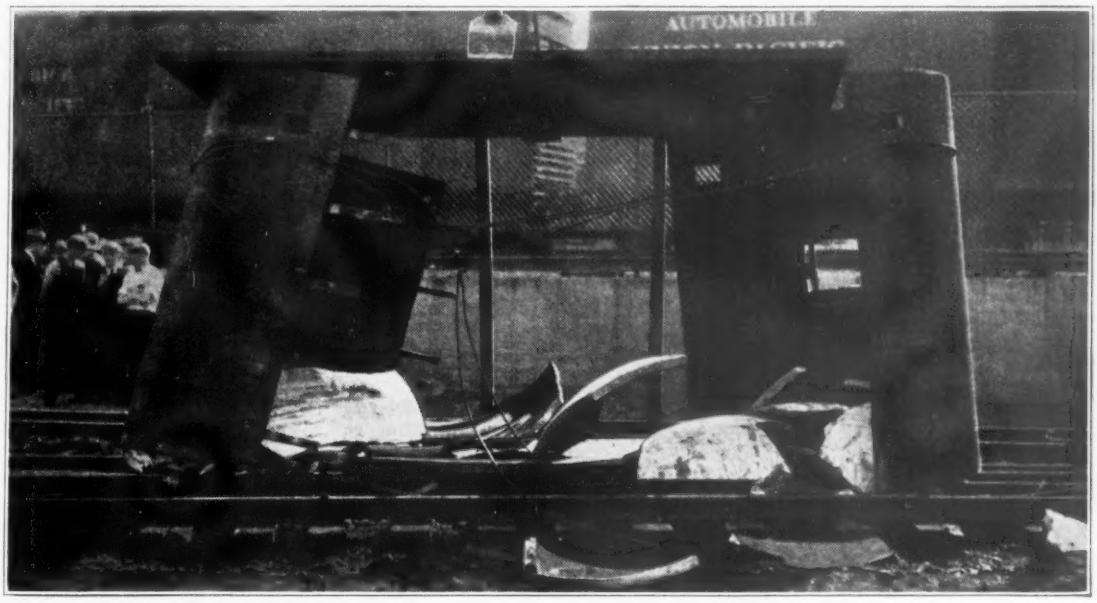
*Single Blow Impact Tests:*

**A skull cracker, weighing 1,718 pounds, was dropped from a height of 23.5 feet, first on the pole of the sphere, then on the weld while the vessel was under a pressure of 2,620 pounds per square inch. The vessel was deformed inward $^1/_4$ inch in the wall section — $^3/_{16}$ inch on the weld.**

*Pressure Test to Failure:*

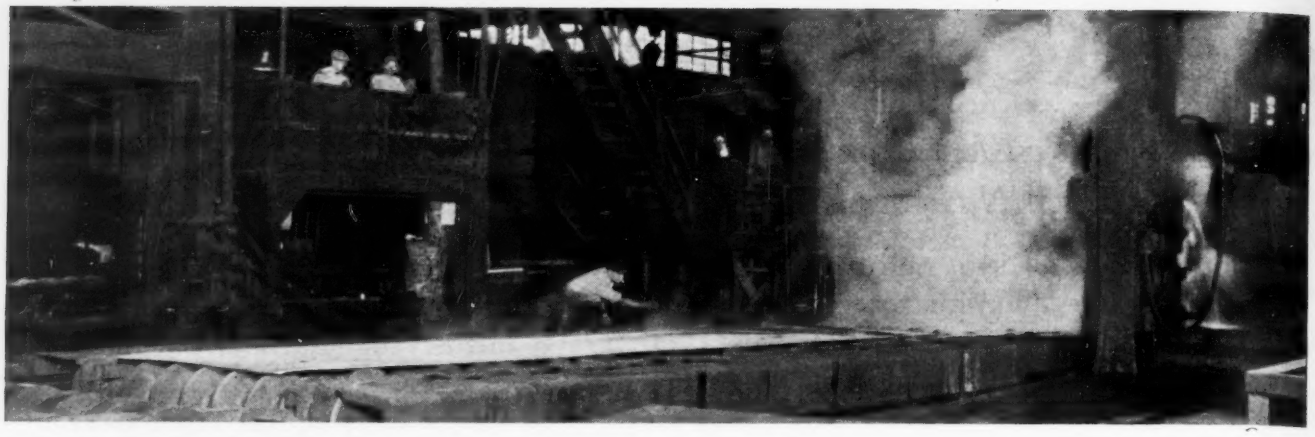
**For the destruction test the vessel was surrounded with steel sections. Failure occurred at a pressure of 5,700 pounds per square inch — equivalent to a calculated strength of the steel of 83,400 pounds per square inch.**

**The results of the test showed clearly the value and practicability of the spherical form — of the chrome-vanadium steel — and of the application of SMITHWelding in the transportation and storage of gases under very high pressures. A complete report will be placed before any executive, engineer or operating official interested.**



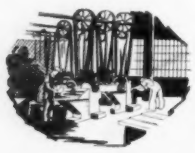

# PRESSURE VESSELS

OPERATING PRESSURES UP TO 5000 POUNDS



# PROGRESS IN STEELMAKING

A NEW device, known as the 'thrustor," has been installed by several steel companies for accomplishing certain definite motions formerly performed at these plants by solenoids. In one plant a thrustor raises and lowers a furnace door. Thrustors have been applied to the tilting motions of the roller and catcher tables now coming into use with sheet mills. This device also is used in kickoffs and shear stops. The thrustor is a simple device consisting, in brief, of a cylinder with a piston; the cylinder contains oil, which, by means of a small impeller, rapidly is pumped from one end to the other, thus changing the position of the piston and accomplishing the desired motion.



AS PART of its economy program a steelworks has concentrated in one machine shop the repair and maintenance work which it formerly performed in four machine shops. The other three have been discontinued. The single machine shop is doing the work with 68 per cent of the labor which was necessary in operating the four shops.

♦ ♦ ♦

A maker of stainless sheets has installed a new electric furnace for annealing this product in a nonoxidizing atmosphere.

♦ ♦ ♦

In steel mill pressure lubrication systems, tendency to use oil instead of grease is gaining. Along this line, some new electric motor installations are equipped for both oil and grease; provision is made to limit the amount of oil so as to prevent it from going on the commutator.

♦ ♦ ♦

To handle steel in small units, a Western plant has installed a 50-ton hot metal mixer. This is particularly useful in producing special steels.

♦ ♦ ♦

At a self-contained steel plant, the open-hearth furnaces burn a mixture composed of 60 per cent of producer gas and 40 per cent of blast furnace and coke oven gas mixed. Two gas producers are located at each open-hearth. One producer is in continuous operation, the other being held in reserve, in case the supply of blast furnace gas and coke oven gas is cut off. The producer gas averages 140 B.t.u.'s and has a sensible heat of 1300 degrees, equivalent to a total of 175 to 180 B.t.u.'s. The blast furnace gas at 95 B.t.u.'s and the coke oven gas at 500 B.t.u.'s are mixed to average 180 B.t.u.'s.

♦ ♦ ♦

A manufacturer of cold-rolled strip steel is annealing this product in electric furnaces of the bell type. In these units, the annealing takes place in a gaseous non-oxidizing atmosphere.

## Roller Proves His Worth

IN THE days when lines of caste were sharply drawn in the steel industry and the melter's wife would not speak to anybody lower in the social scale than the wife of the first helper, a young man who recently vacated an eminent place in the steel industry by death, was making his way in the rough and tumble way then characteristic of the industry.

One day, passing a blooming mill, his eye lit on something he did not like. He shook his fist at the roller and told him exactly what he thought about it. The roller said not a word, but came down from his pulpit and accepted the superintendent's challenge. There followed a stubborn battle and though the young superintendent was a famed fighting man, the roller proved too much for him.

"Now you can take your job and you can so and so," shouted the roller as the superintendent staggered up from the floor.

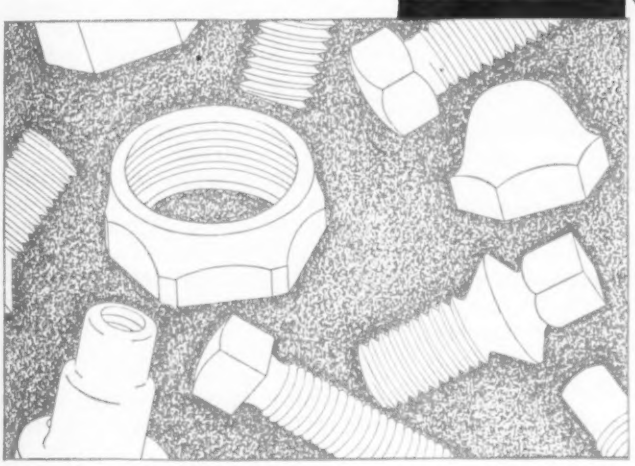
"You blankety blank blank, is that so!" yelled back the superintendent, as he dusted off his clothes. "You are too good a man to lose. Get up there and get to work!"

Whereupon, in the quaint manner of those times, there developed a loyalty between these two men which knew no ending while they lived.

A CERTAIN large steel plant comprises several different departments manufacturing diversified products. The way this plant is managed makes it resemble a community of independent plants. Each department is headed by a superintendent and these men report to a general superintendent. Each superintendent is held responsible for the showing of his individual department, without any reference whatever to the showing of the plant as a whole. Responsibility placed on each superintendent embraces profits, ability of his department to hold its own in meeting competitors and ability to keep customers satisfied. In this organization, operating men give the impression of regarding operating problems as incidental rather than as the principal phase of the business.

# UNIFORMITY

## ASSURED THROUGH J&L OWNERSHIP-CONTROL OF ALL RAW MATERIALS AND PROCESSES OF MANUFACTURE FROM ORE TO FINISHED PRODUCT



Automatic machine production lags when stock of varying cutting qualities necessitates frequent machine adjustments . . . . . Automatic machine production stays at peak when uniform stock is used. *Good* cold finished steel is not enough; *good* and *uniform* cold finished is the real requirement.

J & L knows this need, and consistently meets it. All of the steel is produced at the same plants—by the same men—under the same processes. No outside influence can affect the uniformity, for J & L exercises ownership-control over all raw materials and processes of manufacture from ore to finished product. J & L thus offers a uniformity in its steel that translates itself into uniformity of customer satisfaction.

J&L STEEL

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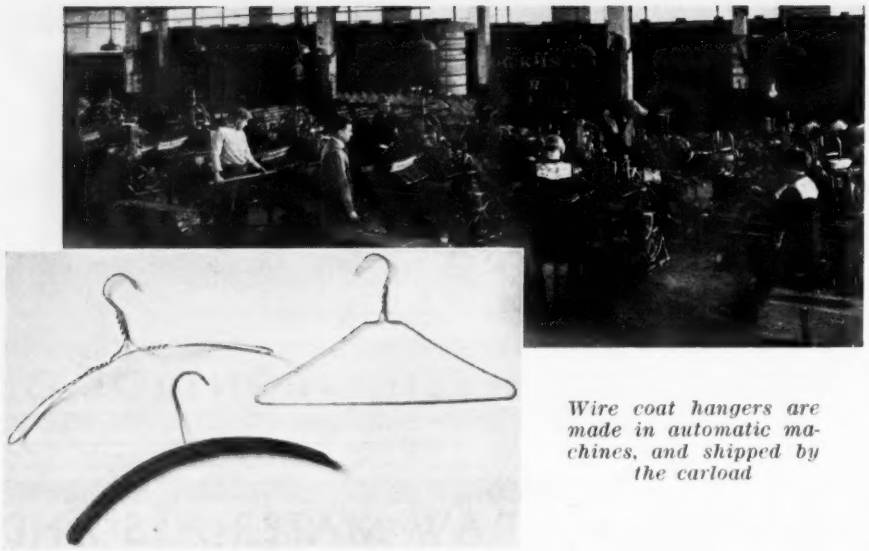

*Wire coat hangers are made in automatic machines, and shipped by the carload*

# Large Uses of Steel In Small Ways

198th Article ◆ Coat Hangers

FEW industries are in such sheltered position that they seldom if ever feel a depression. Fewer still are so fortunately situated that they actually thrive during hard times. Among the latter are the leading manufacturers of coat hangers who made more hangers in 1930 than in 1929, and who expect to make more this year than in 1930.

It would be well for other manufacturers to note the circumstances: First, an organization that dominates its field; second, a product for which the demand tends to increase when people are most disposed to be economical. This combination has established one company on such a firm basis that its general manager remarked recently: "Our six factories run the year round, for in this business we never know a depression."

### 12,500 Tons of Wire

This company in 1930 consumed approximately 12,500 tons of steel wire, and as its output comprised 75 per cent of the total a fair estimate for consumption by the industry as a whole is 15,000 tons.

According to these manufacturers demand for their product is strongest when consumers are compelled to conserve their clothes more than they usually do. The extra attention given to many articles of wearing apparel to make them last longer, and to keep up their appearance, results in the use of more hangers, especially by the dry cleaning industry, the largest group of purchasers. Prosperous times, it might be supposed, would be the coat hanger manufacturers' "winter of discontent," but such is not the case.

The coat hanger industry started about 20 years ago when tailors did most of the dry cleaning. In those days a company in Detroit manufactured a hanger which sold for 25 cents, and which tailors gave away with every suit of clothes made for a customer. As the business of dry cleaning broke away from tailoring the demand for an inexpensive hanger was noted by this manufacturer, who then began to develop special machinery.

### Shipped by Carload

Hangers were made for the dry cleaners and the notion stores for around one cent a piece. They were sold first by the gross, then by the wagon load, and now are shipped by the carload. The domestic trade absorbs the bulk of the output, but shipments are made to every civilized country on the globe. The output of wire coat hangers in the United States in 1930 amounted to over 125,000,000. In addition several millions were made of wood.

No. 11 and 12 gage plain basic steel wire is used in the manufacture of the bulk of the hangers. The hangers made from No. 11 gage wire weigh approximately 2.1 ounces and those made from No. 12 gage wire, about 1.7 ounces. There are variations from these weights due to the type, or style, some weighing as much as 4 ounces.

The wire is purchased in coils, and in some operations is fed directly into the machines, which first cut it to proper length, and then form it, while in other instances the wire is first cut to length, independent of the forming machine, into which the strips are fed later. The simplest form of hanger has one loop, forming the hook, two bends, forming the shoulders, and the shape is closed by giving the end of the wire a few twists around the base of the hook. Other and more elaborate types also are formed in automatic machines. In practically all wood hangers a short piece of wire in the form of a loop serves as a hook.

A finish of black japan is put on most of the wire hangers, though the trend is toward the use brighter colors.

## Tungsten Shipments, Imports Decrease in 1930

One industry that showed a gain during 1930 was the manufacture of tungsten carbide tools, according to the bureau of mines, department of commerce. These tools have shown such great efficiency in various types of work that the demand for them has grown although the price for the compound is $1 per gram—one and one-half times the value of gold.

Another surprising item of the tungsten business is that between 300,000 and 350,000 pounds of tungsten is used annually in hard-facing alloys which are welded to the edges of oil-well bits.

However, since much the greater part of the tungsten ore and concentrates produced in and imported into the United States is used in the manufacture of high-speed tool steel, the consumption of tungsten, and usually the production, fluctuates with the rise and fall in operations in the steel industry. One short ton of tungsten concentrates is used for each 13,700 long tons of steel ingots and castings made. Therefore, the decrease of 28 per cent in the production of steel in 1930 was reflected both in the domestic shipments and imports of tungsten ore and concentrates.

Shipments of tungsten concentrates, produced in the United States, in 1930 amounted to 702 short tons, as compared with shipments in 1929 amounting to 830 short tons. Shipments in 1930 were 453 short tons below the average for the five years 1925-1929.

Imports of tungsten ore and concentrates decreased in 1930. Imports contained 3,694,894 pounds of tungsten, as compared with imports in 1929 containing 5,973,817 pounds of tungsten.

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WINDING REELS

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SHEARS

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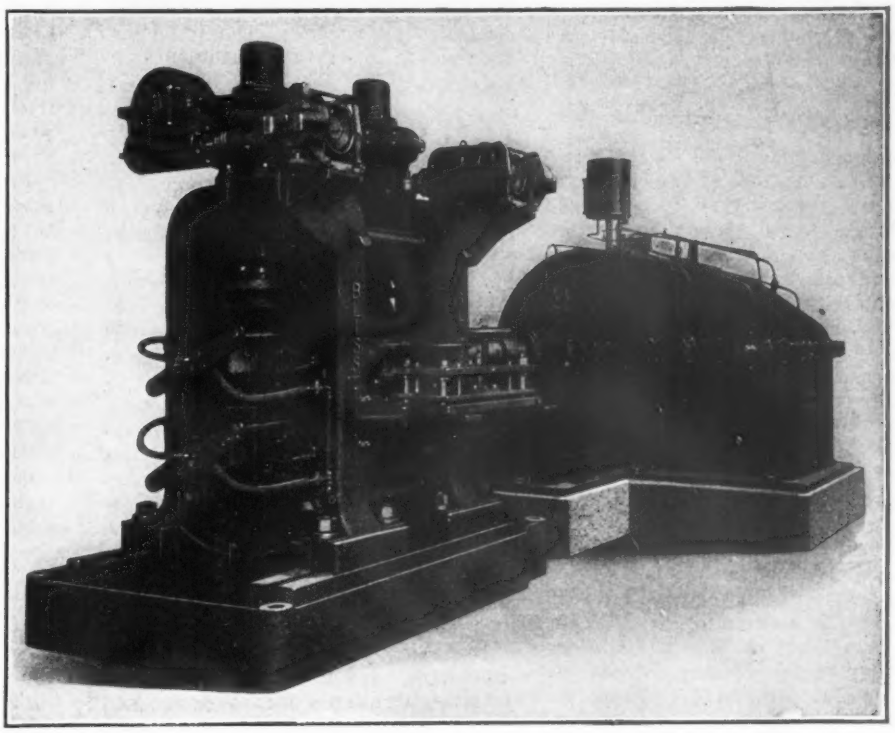
ETC.

ETC.



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BLISS

No. 579

# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## Alloy Steel Making

*Important features to consider in the making of alloy steels, discussed by John Howe Hall, in The Foundry, second and concluding installment, Aug. 1, p. 49, 3½ pp.*

Induction furnaces are better suited to the manufacture of the stainless steels than the arc-type furnace, as there is no carbon pickup and little change of composition in melting scrap and alloys. The factor of bottom contamination is of less consequence with some of these furnaces, as it does not cost much to have several furnace bodies on hand, using each body for a different class of steel. None of the alloy steels should be shipped without heat treatment. For many of the uses for which low alloy steels are being offered today, a properly heat treated ordinary steel or at best a steel such as the intermediate manganese product, is all that really is required. Some of the high alloyed steels require quenching in oil or water, or at least cooling in air after removal from the furnace, which involves special equipment. There is the extra cost involved in keeping lots or heats of special steels separate and properly identified as they go through the shop.

—STEEL, 8-20-31

## Heat Treating 18-8

*Procedure for the correct heat treatment of chrome-nickel steel, discussed by C. A. Scharschu, in Metal Progress, August 1931, p. 68, 7½ pp., 6 illusts.*

When these alloys are cooled slowly, or held between 800 and 1500 degrees Fahr., a change takes place which increases the magnetic permeability and precipitates a constituent, presumably carbide, at the grain boundaries. Severe cold working at atmospheric temperatures apparently also precipitates carbide. For applications involving service in this range, alloys should be annealed after fabrication, if maximum corrosion resistance is required. Material that has been stressed severely also should be annealed. Where maximum ductility is required, annealing at 2100 degrees Fahr. gives slightly better results, but annealing at these high temperatures results in the formation of a larger grain, unless the time held at temperature is a minimum. Where strength and high fatigue resistance are essential, annealing should be carried out at lower temperatures.

—STEEL, 8-20-31

## Heat Insulation

*A new source of raw materials for high-temperature heat insulation, by J. Bryte Barnitt and R. T. Heilman, Proceedings of the Engineers' Society of Western Pennsylvania, July, 1931, p. 349, 13 pp., 4 tables, 3 charts.*

The bulk of refractory materials consists of but three chemical compounds—silica, alumina and combinations of these in the form of clays. Silica and clays have been used extensively for heat insulating materials but alumina has had but little application until recently. Alumina obtained from aluminous ores by the Bayer and fusion processes of extraction is of high purity and resists temperatures up to 3600 degrees Fahr.

Of the various aluminous materials, three show evidence of possible use as heat insulators—monohydrated bauxite, aluminum monohydrate, and water floated bauxite residue. Tests have revealed that monohydrated bauxite in powder form is a superior insulating material, comparing favorable in density, stability and insulating value with any existing commercial materials. Monohydrated bauxite maintains its heat resistance without breakdown up to a temperature of 1900 degrees Fahr. It can be molded into large blocks, thus reducing the number of joints and lowering installation costs. Commercial production is under way on blocks 9 by 36 inches and 12 by 36 inches, of varying thicknesses.

—STEEL, 8-20-31

## Welding Stainless Alloys

*Procedure for welding chrome-nickel and straight-chrome groups of the stainless irons, discussed by V. W. Whitmer, in Welding, July 1931, p. 457, 7 pp., 13 illusts.*

Welding chrome-nickel alloys should always be done on clean or scale-free surface to avoid oxidation. When the weld is finished there will be a discolored area on both sides of the bead due to scale formed at the high temperature. This must all be removed by grinding or pickling if maximum corrosion resistance is to be obtained. In welding alloys of 18 and 8 composition the wire or welding electrode is connected to the positive terminal of the generator and the work to the negative. This is opposite as used with common steel.

For arc welding these alloys it is essential that a properly coated rod be used. The object of coating is three-fold: It must produce a stabilizing effect on the arc to facilitate the operation; it must protect the metal from the oxygen of the air while going through the arc; and finally fuse, forming a protection over the deposited metal until solidified to eliminate any possible oxidation of the alloys.

The flux while protecting the metal must not contain carbonaceous material because such compounds will break down under the temperature of the arc and carburize the weld metal.

—STEEL, 8-20-31

## Rubber-Lined Acid Tanks

*Data on rubber linings and method of building rubber-lined pickling tanks, discussed by H. E. Fritz, in Chemical & Metallurgical Engineering, July 1931, p. 396, 1½ pp., 2 illusts.*

Combinations of hard and soft rubber and other materials are the ultimate solution to the perplexing problem of containers for pickling. There is the tendency to make use of the newer organic inhibitors, which have practically the same effect on rubber as oil; hence, it is necessary to use hard rubber in some form or other for this service. One type of construction includes soft and hard rubber plies arranged so that the hard plies are not united but overlap each other, thus offering the protection against physical damage of a hard rubber layer and arranged so that all lap seams form expansion joints. The latter absorb the expansion and contraction of hard rubber, and eliminate buckling and cracking. The hard rubber layer also offers the advantage of a more resistant material so cushioned as to render it serviceable under conditions of vibration, impact and strain. Illustrations accompany the text and depict various details of tank construction.

—STEEL, 8-20-31

# Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

## Welding Rod Developed for Use on Manganese Steel

American Manganese Steel Co. Inc., Chicago Heights, Ill., announces a new type of nickel-manganese steel welding rod designed to make it possible for relatively unskilled operators to make perfect welds.

The high nickel content of this rod, which runs approximately 5 per cent, is said to overcome the tendency of the metallic manganese content to oxidize, also to prevent embrittlement under slow cooling which the rather high carbon content might otherwise bring about. Care is taken to insure that the composition of the rod adheres closely to the theoretically correct analysis.

The maker points out that when this rod is melted in the atmosphere and applied to articles of ferrous metal, it exhibits the essential characteristics of standard heat treated manganese steel, which are toughness, ductility, resistance to abrasion and hardening under cold working.

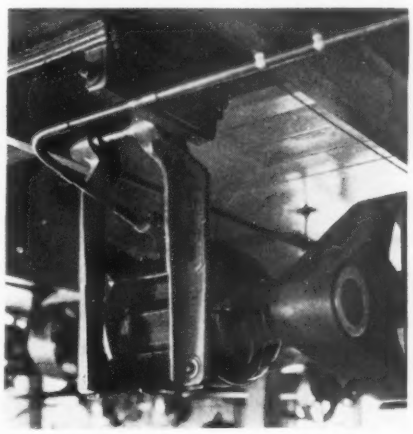
This new rod is recommended for use in repairing manganese steel castings, in the reclamation of manganese steel dipper teeth, crusher mantles and jaws, railway track members, etc., and in depositing wear-resisting coating on almost any kind of steel casting.

◆

## Automatic Cutoff Machine Uses Oscillating Tools

Rickert-Shafer Co., Erie, Pa., announces a new automatic cutting-off machine, which departs somewhat from conventional design. While shown in the accompanying illustration tooled up for cutting off pipe nipples, the machine also is well adapted for handling rods, tubing, etc., being notably free from vibration, according to the builder.

Instead of mounting the tool holders on cross slides, they are mounted on oscillating arms pivoted upon a massive stud directly below the spindle. These arms are actuated by disk cams, adjustable to give the proper depth of cut and rate of feed. These cams are at the end of a heavy shaft passing through the base, below



*Self-adjusting flat belt drive designed by Rockwood Mfg. Co.*

the pivot stud and in line with the spindle. They contact with large rollers at the end of the arms, these arms constantly being drawn toward each other by a heavy coil spring. The builder points out that, being mounted tangentially to the work, the tools produce "flow chips" essential to free, clean cutting.

**Feeding and Chucking**

The work revolves, being fed through the hollow, full ball bearing mounted spindle by a system of feed rolls at the back end. These rolls are driven and controlled so as to be in contact with the work only for a fraction of a second. As soon as the work strikes the overhead mounted, swinging adjustable stop and is gripped by the chuck, the rolls automatically are released by a sliding wedge. The work is gripped by a three-jawed push-in collet, actuated by a revolving air cylinder at the rear of the spindle, through a draw bar. Interchangeable jaws accommodate various diameters. Heating of the air cylinder is prevented by passing the coolant through a jacket surrounding the airport housing before passing it to the tools.

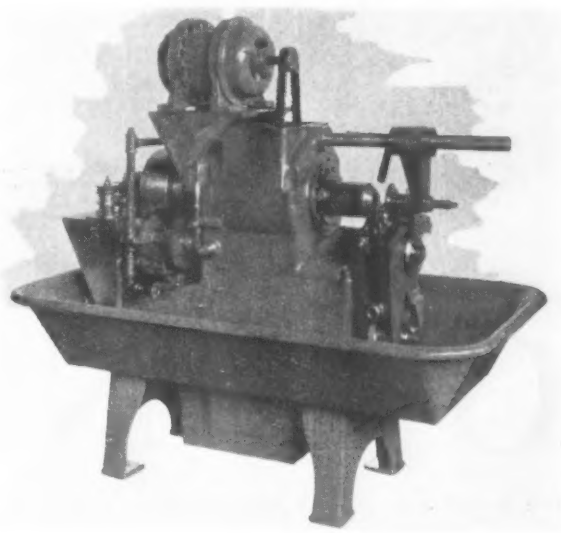
Idle time is reduced to the minimum, and after being set up and adjusted, the machine needs only to be supplied with fresh stock from time to time. One relatively unskilled attendant easily can handle a large battery.

◆

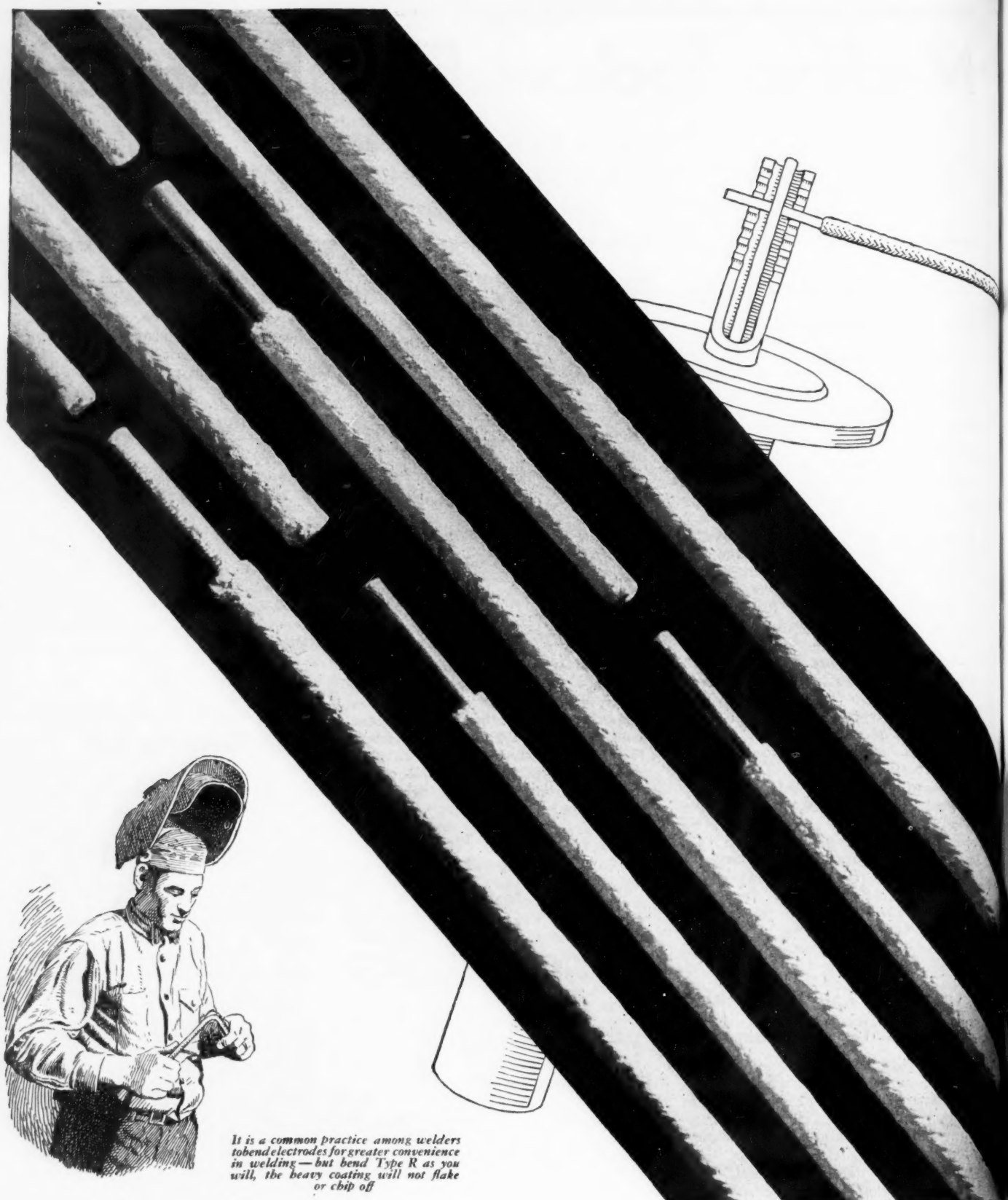
## Self-Adjusting Drive Uses Short-Center Flat Belt

Rockwood Mfg. Co., Indianapolis, has developed a new drive system by which the leather belt is adapted to short-center hook-ups, particularly in connection with individual motor drives for machine tools. The accompanying illustration shows how this system also can be adapted to the driving of overhead countershafts.

The pivoted motor base utilizes the force of gravity, represented by the



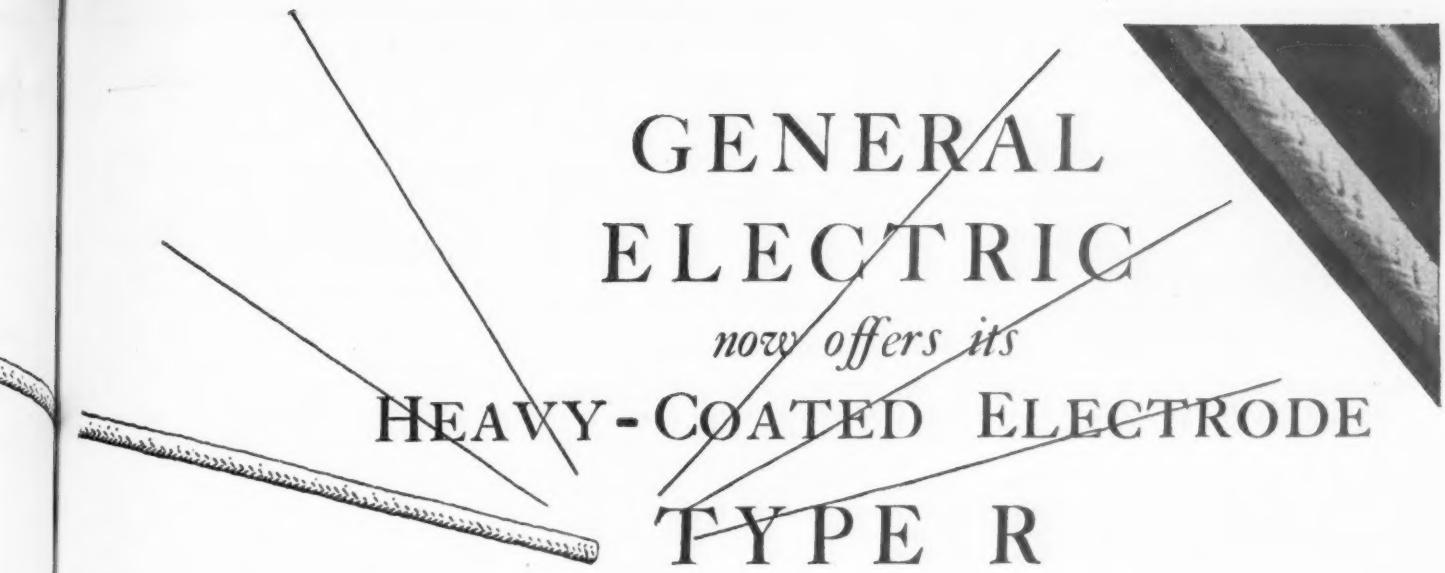
*RICKERT-SHAFER high speed automatic cutting-off machine for rod and tube work, on which oscillating forming and cutoff tools assure desirable 'flow-chips.' An improved system of fast, precise roll feeding also is featured*



*It is a common practice among welders to bend electrodes for greater convenience in welding — but bend Type R as you will, the heavy coating will not flake or chip off*

# GENERAL

GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK



# GENERAL ELECTRIC

*now offers its*

## HEAVY-COATED ELECTRODE

# TYPE R

THE foundation for the heavy coating is a strong, flexible, textile braid which binds the flux to the core so securely that it cannot chip or flake off, no matter how the electrode is bent.

THIS braid, by its very nature, is absolutely uniform; hence the coating and the arc characteristics are uniform the entire length of every electrode.

THE combustion of this braid and its flux generates gases which protect the arc and the pool of metal.

THE flux retards the combustion of the braid — thus insuring, always, a projecting sleeve of braid, which further protects the arc.

THIS flux is so compounded as to give a fluid slag, which spreads over the surface of the deposited metal, protecting it until it has cooled, but easily removed by a stroke of the operator's brush.

THE free-flowing properties of the slag also prevent slag patches and trapped slag in the finished weld.

*If you want strong, extremely ductile, and good-looking welds, at greatly increased speeds, try Type R. Compare it with other electrodes. Order through your nearest G-E office.*

*Note:* The characteristics which give Type R its high welding speed are not favorable to vertical or overhead welding. A special heavy-coated electrode giving welds equal in quality with those obtained with Type R, will be available for these applications in the near future.

| | | | |
|---|---|---|---|
| Type A for Cast Iron | Type B for Automatic | Type F for General Purpose | Type H for Automatic (Coated) |
| Type R for quality at High Speeds | Type L for Structural | Type M for Soundness of Deposit | Type O for Medium-C. Deposits |

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# ELECTRIC

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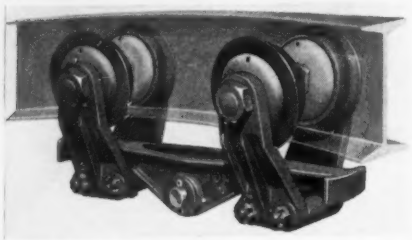


*Ball bearing I-beam trolley unit built by Richards-Wilcox Mfg. Co.*

weight of the motor itself, to take up belt elongation automatically. The maker points out that every leather belt, no matter what may be its quality or shape, is subject to changes in length. With this new drive mechanism such changes can occur without requiring shortening of the belt. The only attention required is an occasional adjustment of the center distance by means of the convenient adjusting screws provided for this purpose.

Each of these drives is engineered for a prescribed belt tension with a specially made flat leather belt of high quality, running on paper pulleys, the drive being furnished only as a complete unit. Motor weight is an important factor and listed drives can only be used with modern alternating-current motors. Listed drives cover motor capacities of 1 to 50 horsepower at 1750 revolutions per minute. Larger sizes up to 500-horsepower capacity can be built to order.

**Methods of Application**

The drive can be mounted on wall, ceiling or floor, the only limitation being that it cannot drive downward. Generally speaking the axis of the motor pulley must not be higher than that of the driven pulley. The maker claims for these drives continued efficiency of 99 per cent or over, and belt slippage of less than 1 per cent, with long belt and bearing life on account of low initial tension.

◆

## I-Beam Trolley Units Have Ball Bearing Wheels

Richards-Wilcox Mfg. Co., Aurora, Ill., recently has placed on the market a new style ball bearing trolley for use with I-beam tracks. The units of the trolley, shown in the accompanying illustration, are connected so that they are free to swivel when going around curves. It is claimed that this feature allows but little more energy to be consumed in rounding curves than on the straight track sections.

The trolley has a long wheel base which is said to give smoothness of travel. Ball bearings are used in the wheels and the balls are protected with felt seal washers. That feature is claimed to keep the dust and dirt out of the bearings and to add life to the trolley. The body of the wheel is made of dense, strong, gray iron with chilled tread. Each trolley is built adjustable to fit four sizes of track and is made for use on any size I-beam up to and including 12 inches.

◆

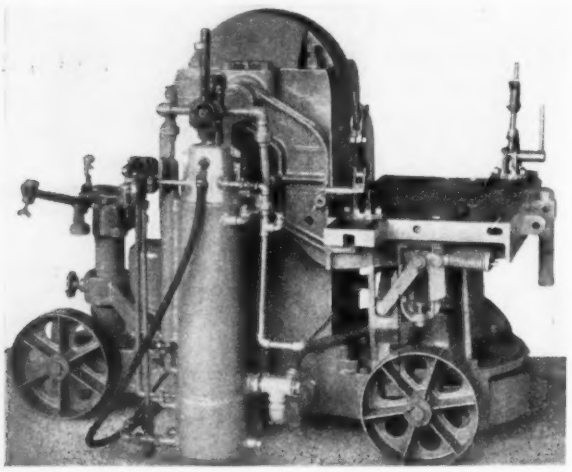
## Improved Molding Machine Cuts Down Ramming Time

Tabor Mfg. Co., 6225 Tacony street, Philadelphia, recently has developed a new jar, rollover and pattern draw molding machine. This is shown in the accompanying illustration.

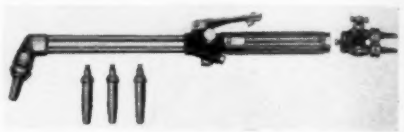
This machine features an effective long-stroke jarring blow and cuts down the time of ramming of molds to the minimum. Rollover mechanism is oil controlled, which makes it safe to perform the rollover action in 4 seconds. The table is free of the rollover frame during the jarring operation, but it is locked securely to this frame when rolling over takes place, the locking being automatic and positive. Under no conditions is it possible for the plate to be thrown.

Leveling mechanism is entirely automatic, the flasks being leveled instantly when this device contacts with the bottom board of the flask on the machine. The operator is not required to touch this leveling member, it being controlled from the valve stand of the machine. The pattern draw also is oil-controlled, giving the slow start and steady draw which insures good molds which require no patching. Its guide is self-aligning and is ball bearing equipped, thereby requiring no lubricant. The entire mechanism, as indicated by the illustration, is fully enclosed, thereby being thoroughly protected against the possibility of the penetration of sand.

Principal specifications of this new molding machine are: Table size, 18 x 18 inches; draw, 10 inches; jar cylinder, 4½ inches in diameter; rollover cylinder, 7 inches in diameter; capacity (with 80 pounds per square inch air pressure), 350 pounds.



*IMPROVED jar, rollover and pattern draw molding machine developed by Tabor Mfg. Co. This machine features an effective long-stroke jarring blow, cuts ramming time to the minimum and eliminates patching of molds*



*New cutting blowpipe made by Linde Air Products Co.*

◆

## Cutting Blowpipe Designed By Linde Air Products Co.

Linde Air Products Co., 30 East Forty-second street, New York, recently has added a cutting blowpipe and cutting attachment to its new line of medium-pressure apparatus of the detachable valve body design. The new cutting apparatus, illustrated above, includes a cutting blowpipe and a cutting attachment.

Those two pieces of cutting apparatus, with corresponding types of welding blowpipes, may be used interchangeably with the same detachable valve body. With the detachable valve body, the operator can change easily and quickly from a full size welding blowpipe to a smaller welding

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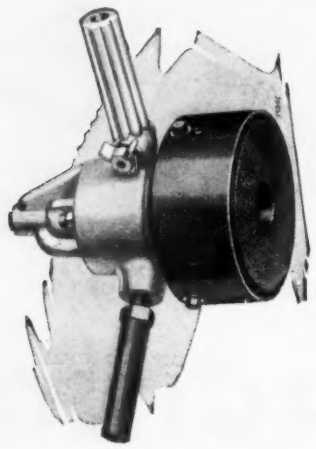


*Ingersoll-Rand multiple-vane grinder has many industrial applications*

blowpipe, to a full size cutting blowpipe, or to a cutting attachment without detaching the hose or hose connections.

Locking device for connecting the detachable valve body to any of the blowpipe handles consists of a locking bolt and wedge-shaped locking screw. The locking screw is operated by turning a ring and draws the detachable valve body and blowpipe handle together, thereby making an absolutely gas-tight joint.

**Built for Hard Use**

The blowpipe is of light but sturdy construction to withstand the hard usage. It is supplied as standard with 4 cutting nozzles and a 75-degree angle head. If required, a 90-degree angle head can be supplied. Steel and wrought iron up to 12 inches in thickness may be cut readily with this blowpipe.

The cutting attachment is of the single joint design and attaches directly to the valve body. It will cut metal up to 2 inches in thickness. Because of its small size, only 11 inches overall, it may be carried conveniently in the pocket of the operator when not in use. Advantages of design and construction embodied in the full size corresponding type cutting blowpipe are incorporated in this cutting attachment.

◆

## Light Portable Grinder Is High Production Tool

A new grinder and sander of the multiple-vane type has been developed by the Ingersoll-Rand Co., Phillipsburg, N. J. This grinder, which is illustrated herewith, is a light, high production tool.

It can be fitted with a grinding wheel, sanding head, or wire brush. Some of the many uses to which it can be put are sanding and polishing automobile bodies, smoothing down welds, cleaning and surfacing large castings for painting, polishing locomotive side rods, sanding metal furniture, dies and other metal and wood surfaces, and wire brushing.

The machine is built with two handles so that the operator can readily hold it at right angles to the working surface. One of the handles may be removed to facilitate working in close quarters. The second handle acts as the air inlet and contains a thumb-controlled throttle valve. The standard free speed is 4600 revolutions per minute, but units can be furnished for higher or lower speeds. Overspeed is prevented by a governor. The machine weighs 10¾ pounds without the adjustable guard for grinding wheels. It has overall length of 9¼ inches.

◆

## Set of Wheels and Shapes For Portable Grinders

Carborundum Co., Niagara Falls, N. Y., announces a new production set of mounted aluminum oxide abrasive wheels and points designed to obviate a wide variety of shapes and sizes of wheels for general work with portable grinders. The set is shown in the accompanying illustration, together with the dressing stick and container designed to protect the wheels and points when not in use.

Study was made to insure that the shapes not only are thoroughly practical but also true and secure in their mounting on the rustproof, copper coated mandrels or spindles. Confusing range of gradings has been avoided and there are no dead numbers or shapes in the set, all having practical application in the average plant. A generous amount of abrasive is used and fast, clean cutting is assured on various nonmetals and on all metals except aluminum, solder and tin.

Included in the set are two rubber bonded polishing wheels designed to burnish metal without loading or filling. All the plain shapes have relieved ends to permit grinding flat surfaces and blind holes, and two of the shapes can be used in die grinding, in forming teeth of special cutters and for sharpening small circular tools.

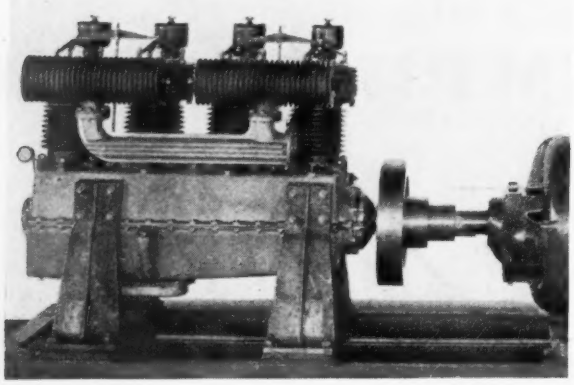
*Set of abrasive wheels and points brought out by Carborundum Co.*

Standard copper-coated spindles are ⅛-inch in diameter and 1⅛ inches long. For dental-type hand pieces spindles can be furnished 3/32-inch in diameter and 1⅛ inches long. For certain types of grinders and flexible shaft machines, spindles ¼-inch in diameter and 1½ inches long can be furnished.

◆

## Compressor Is Designed for Use in Small Plants

Davey Compressor Co. Inc., Kent, O., is manufacturing a line of compressors which are applicable to the needs of small foundries. One unit, shown in the accompanying illustration displaces 142 cubic feet per minute and is the smallest of the class. Other units displace 240 to 320 cubic feet per minute respectively. The machines are entirely automatic, air-colled and electrically operated by direct-connected motor.



*ONE of line of air-cooled units developed by Davey Compressor Co. especially to meet needs of small plants in which pneumatic tools are used*

# Steel Activity Continues To Rise

## Operations Up to 33½ Per Cent—Structural Inquiry Brisk—Rail Demand Improves—Recession in Automotive Assembly Milder Than Expected

A FURTHER rise in production, continued brisk inquiry for building steel, a milder recession in automobile assembly than was anticipated, and greater interest by the railroads in the equipment and track material markets encourage the steel industry for the second consecutive week. There is nothing, yet, to indicate a genuinely virile recovery and the improvement is spread rather thinly, but for two weeks now the steel markets have borne the earmarks of the usual fall upturn.

Slightly higher operations at Chicago, Youngstown and Cleveland more than wash out a decline at Buffalo, putting the steel rate up 1½ points this week to 33½ per cent. In the five weeks of July steel mill operations curved downward, successively, from 34½ to 33½ to 33 to 30 to 32 per cent. In the first three weeks of August they have curved upward from 30 to 32 to 33½ per cent. If the fourth week of August also registers a gain, July production totals will be approximated, with an outside chance of a small gain.

Structural steel inquiry, which this week totals 44,241 tons, exclusive of 165,000 tons noted as current last week, is heartening because so well distributed. Barring 16,100 tons for Illinois public works and 8200 tons for a highway at Newark, N. J., this fresh inquiry is for small lots, widely scattered. The week's actual awards detract slightly from this good showing, being 11,020 tons, against 24,904 tons last week. Thus far in 1931 structural awards aggregate 1,196,384 tons; a year ago 1,214,698 tons.

Enlivening the railroad market is a prospective award of 50,000 tons of rails by the Louisville & Nashville to Birmingham mills. Distribution by another southern road may give Birmingham mills 10,000 tons more. Cincinnati Union Terminal project calls for 4600 tons of rails. Releases by western roads may compel Chicago rail mills to expand operations in September. The Pennsylvania will build 20 tenders in its shops. The New York Central's 500 box cars probably will be built in that road's Merchants Despatch shops.

If current Ford assembly be counted as production, August output of automobiles will not slump much below 190,000 units, or 12 per cent less than in July. Broader releases for pig iron at Cleveland and highly-finished sheets at Youngstown for September delivery at Detroit support expectations of a more active automobile industry next month. One important farm implement manufacturer in the Chicago district may resume shortly on a substantial scale. In both steel and cast iron pipe the week's awards and inquiry are light, with prices of large size iron pipe easier.

Activity in the scrap market has subsided and prices have failed to hold their recent gains. Heavy melting steel has been marked down 50 cents at Chicago, and the general levels at Pittsburgh and Philadelphia are lower. In pig iron the only feature of note is the rising tendency in demand from the automotive industry; the volume of new business is too restricted to afford a real test of prices.

In an effort to localize the depression in ore to this season, steelworks have curtailed their releases, indicating this will be a 25,000,000-ton ore year, poorest since 1921. The industry is attempting to come into the season of 1932 with only normal stocks of ore on lower lake docks.

After holding at $31.06 for three consecutive weeks, STEEL's composite of iron and steel products is down 2 cents to $31.04, reflecting easier pig iron prices in eastern Pennsylvania. The finished steel composite continues at $48.72, while that for steelworks scrap is down 8 cents to $8.79.

## Composite Market Averages

| | This Week (Aug. 19) | Last Week (Aug. 12) | One Month Ago (July, 1931) | Three Months Ago (May, 1931) | One Year Ago (Aug., 1930) | Ten Years Ago (Aug., 1921) |
|---|---|---|---|---|---|---|
| Iron and Steel Composite | $31.04 | $31.06 | $31.05 | $31.37 | $32.99 | $35.99 |
| Finished Steel Composite | 48.72 | 48.72 | 48.68 | 49.02 | 51.72 | 57.09 |
| Steelworks Scrap Composite | 8.79 | 8.87 | 8.70 | 9.31 | 12.62 | 10.25 |

**Iron and Steel Composite:**—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | August 19, 1931 | July, 1931 | May, 1931 | Aug. 1930 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $18.26 | 18.26 | 18.26 | 20.26 |
| Basic, valley | 17.00 | 17.00 | 17.00 | 18.00 |
| Basic, eastern del. eastern Pa. | 16.75 | 16.75 | 17.00 | 18.00 |
| No. 2 foundry, del. Pittsburgh | 18.26 | 18.26 | 18.26 | 19.26 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 17.50 | 17.50 |
| *Southern No. 2, Birmingham | 12.00 | 12.00 | 12.00 | 14.00 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 18.25 | 18.25 |
| **No. 2X, Eastern del., Phila. | 17.26 | 17.76 | 17.76 | 19.76 |
| Malleable, valley | 17.00 | 17.00 | 17.00 | 18.50 |
| Malleable, Chicago | 17.50 | 17.50 | 17.50 | 17.50 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 17.63 | 17.63 | 17.63 | 18.63 |
| Ferromanganese, del. Pittsburgh | 89.79 | 89.79 | 89.79 | 103.79 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

| | | | | |
|---|---|---|---|---|
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.40 | 2.40 | 2.45 | 2.50 |
| Connellsville foundry, ovens | 3.25 | 3.25 | 3.25 | 3.50 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 29.00 | 29.00 | 29.75 | 31.00 |
| Sheet bars, open-hearth, Pitts. | 29.00 | 29.00 | 29.75 | 31.00 |
| Billets, open-hearth, Pittsburgh | 29.00 | 29.00 | 30.00 | 31.00 |
| Wire rods, Pittsburgh | 35.00 | 35.00 | 35.00 | 36.00 |

| | August 19, 1931 | July, 1931 | May, 1931 | Aug. 1930 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.65 |
| Steel bars, Chicago | 1.70 | 1.70 | 1.75 | 1.75 |
| Steel bars, Philadelphia | 1.89 | 1.89 | 1.94 | 1.94 |
| Iron bars, Chicago | 1.70 | 1.70 | 1.80 | 1.80 |
| Shapes, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.65 |
| Shapes, Philadelphia | 1.76 | 1.76 | 1.76 | 1.66 |
| Shapes, Chicago | 1.70 | 1.70 | 1.75 | 1.75 |
| Tank plates, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.65 |
| Tank plates, Philadelphia | 1.80½ | 1.80½ | 1.85½ | 1.80½ |
| Tank plates, Chicago | 1.70 | 1.70 | 1.75 | 1.75 |
| Sheets, No. 10 blue anneal., Pitts. | 1.85 | 1.85 | 1.85 | 1.95 |
| †Sheets, No. 24, hot, ann., Pitts. | 2.40 | 2.40 | 2.15 | 2.50 |
| Sheets, No. 24, galvan., Pitts. | 2.90 | 2.90 | 2.80 | 3.10 |
| Sheets, No. 10 blue anneal., Chi. | 2.00 | 2.00 | 2.00 | 2.15 |
| †Sheets, No. 24, hot, ann., Chi. | 2.55 | 2.55 | 2.40 | 2.60 |
| Sheets, No. 24 galvan., Chi. | 3.05 | 3.00 | 2.95 | 3.20 |
| Plain wire, Pittsburgh | 2.20 | 2.20 | 2.20 | 2.30 |
| Wire nails, Pittsburgh | 1.90 | 1.85 | 1.90 | 2.05 |
| Tin plate, per base box, Pitts. | 5.00 | 5.00 | 5.00 | 5.25 |

†Comparisons are with old classification No. 24 black sheets.

| | | | | |
|---|---|---|---|---|
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 10.75 | 10.50 | 11.25 | 15.20 |
| Heavy melting steel, eastern Pa. | 8.75 | 8.25 | 9.50 | 12.65 |
| Heavy melting steel, Chicago | 8.00 | 8.50 | 8.65 | 12.00 |
| No. 1 wrought, eastern Pa. | 9.75 | 10.00 | 11.00 | 14.25 |
| No. 1 wrought, Chicago | 8.25 | 8.25 | 8.40 | 11.25 |
| Rails for rolling, Chicago | 10.50 | 10.50 | 11.15 | 14.50 |

# Sheets

**Market Spotty, with Slight Improvement in Some Lines—Chicago District Output Lower**

SHEET PRICES, PAGE 59

**Pittsburgh**—General demand for sheets shows little or no improvement. No change in the automotive situation is indicated with respect to sheets, but there is some prospect of improved specifications early next month, particularly from Ford. Radio manufacturers are specifying somewhat more actively, many of them contemplating bringing out new models for the holiday trade. Demand from refrigerator makers continues to taper. Specifications from makers of steel furniture and shelving remain slow. Prices are steady with producers quoting 2.40c, Pittsburgh, for hot-rolled annealed sheets, 2.90c for galvanized, 1.85c for blue annealed, and 3.10c for autobody. Sheet mill operations are holding fairly steady at approximately 35 per cent.

**New York**—While far from active, a slightly better volume of sheet buying is noted here, and in all cases the new prices have been adhered to, so far as can be learned. Approximately 600 tons of No. 10 and No. 12 gage blue annealed sheets will be required by the Lock Joint Pipe Co., Ampere, N. J., to be used as forms in the production of concrete pipe against an order recently received.

Pennsylvania railroad is taking bids Sept. 1 on its fourth-quarter sheet requirements.

**Philadelphia** — Sheet demand is quiet and prices are unchanged. Competition now is a matter of delivery and reciprocity, with the latter class of sales becoming more noticeable.

**Youngstown, O.**—First signs of reviving demand for steel sheets are being discerned by makers of autobody material. Mills making this grade are operating at 60 per cent. The increased volume of orders is coming from many small consumers. This is considered by mill operators as especially encouraging. New business from the larger consumers is seasonally light. Business with refrigerator makers, stampers and other miscellaneous lines of manufacture is holding up well. New contracts under the revised classification are expected to continue slow until about Labor day.

**Cleveland**—Last week saw fair-size activity in sheet shipments. Several items, as galvanized stock, were placed in carload lots while some specifications for more than carloads were received for No. 24 hot-rolled annealed sheets. The 2.90c, Pittsburgh, price was billed on the galvanized sheets, and the regular price of 2.40c went without deviation on the hot-rolled material. Stove interests have issued some fairly good orders and similar improvement has been displayed from a variety of miscellaneous consumers. Some fill-in specifications have been received from the Fisher Body Co. plant. One mill has disposed of large lots of seconds, branded as such, in the local market at prices some $15 a ton less than for primes.

**Cincinnati**—Orders placed with sheet mills in this district are close to immediate needs of buyers. A slight improvement is noted in automotive demand.

**Chicago**—Sheet production has been reduced to 30 to 35 per cent as ten hot mills at Milwaukee will be down for some time. No. 10 blue annealed is steady at 1.95c, Chicago district mills. Prospects for August roofing orders from the Southwest are not encouraging. Radio and mechanical refrigerator orders are slow. The last few days have been virtually no test to prices.

**St. Louis**—Large consumers appear well supplied with sheets and the smaller users are buying only for immediate requirements. Shipments since Aug. 1 are slightly heavier than during July.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**HOT ROLLED No. 10**

| | |
|---|---|
| Pittsburgh base | 1.70c |
| Gary, Ind. Harbor, base | 1.80c |
| Chicago, del. | 1.85c |
| Philadelphia, del. | 1.99c |
| Birmingham, base | 1.85c |
| St. Louis, del. | 2.60½c |

**BLUE ANNEALED No. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.85c |
| Chicago, district mills | 1.95c |
| Chicago, delivered | 2.00c |
| Philadelphia, del. | 2.14c |
| St. Louis, delivered | 2.20½c |
| Birmingham | 2.00c to 2.05c |
| San Francisco, c.i.f. | 2.50c |

**HOT ROLLED ANNEALED No. 24**

| | |
|---|---|
| Pittsburgh, base | 2.40c |
| Gary, Ind. Harbor, base | 2.50c |
| Chicago, del. | 2.55c |
| Philadelphia, del. | 2.69c |
| Birmingham, base | 2.55c |
| St. Louis, del. | 2.75½c |

**GALVANIZED No. 24**

| | |
|---|---|
| Pittsburgh, base | 2.90c |
| Gary, Ind. Harbor, base | 3.00c |
| Chicago, del. | 3.05c |
| Philadelphia, base | 3.19c |
| Birmingham, base | 3.05c |
| St. Louis, del. | 3.25½c |

**AUTOMOBILE No. 20**

| | |
|---|---|
| Pittsburgh, base | 3.10c |

**FURNITURE**

| | |
|---|---|
| Pitts., No. 10 heavy | 2.75c |
| Pitts., No. 20 light | 3.35c |

**TIN MILL BLACK No. 28**

| | |
|---|---|
| Pittsburgh, base | 2.50c to 2.60c |
| Gary base | 2.60c to 2.70c |
| St. Louis, del. | 2.90½c |

**HEAVY COLD ROLLED No. 10**

| | |
|---|---|
| Pittsburgh base | 2.35c |
| Gary, Ind. Harbor, base | 2.45c |
| Chicago, del. | 2.50c |
| Philadelphia, del. | 2.64c |
| St. Louis, del. | 2.70½c |

**COLD ROLLED No. 20**

| | |
|---|---|
| Pittsburgh, base | 2.95c |
| Gary, Ind. Harbor, base | 3.05c |
| Chicago, del. | 3.10c |
| Philadelphia, del. | 3.24c |
| St. Louis, del. | 3.30½c |

## Tin and Terne Plate

**Prices per 100 pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | $5.00 |
| Gary, Ind., base 10 cents higher. | |
| Long ternes, 24, unassorted, lb. | 3.15c |

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. mills, 100 lb. keg

| | |
|---|---|
| Standard wire nails | $1.90 and 2.00 |
| Cement coated nails | 1.90 and 2.00 |
| Galvanized nails | 3.90 and 4.00 |
| (Per pound) | |
| Polished staples | 2.35c and 2.45c |
| Galvanized staples | 2.60c and 2.70c |
| Barbed wire, gal. | 2.55c and 2.65c |
| Annealed fence wire | 2.35c and 2.45c |
| Galvanized wire | 2.80c and 2.90c |
| Woven wire fencing, (9-11 ga.) | $55.00 and $60.00 |
| (12½ ga. and lighter) | 60.00 and 65.00 |

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.20c |
| Spring wire | 3.20c |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts.-Cleve. | 2.75c |
| Struc., c.l., Chicago | 2.85c |
| 7/16-in. smaller, Pitts. | 70, 10 and 5 off |
| Chi., Cleve. | 70 to 70, 10 and 5 off |

## Steel Plates

| | |
|---|---|
| Pittsburgh, base | 1.60c |
| Philadelphia, del. | 1.80½c |
| New York, delivered | 1.88c |
| Boston, delivered | 2.00c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, base, for railroads | 1.65c |
| Lackawanna, N. Y., base | 1.75c to 1.80c |
| Birmingham, base | 1.75c to 1.80c |
| Coatesville, Pa., base | 1.70c |
| Pacific Coast, c.i.f. | 1.85c to 1.95c |
| St. Louis, del. | 1.95½c |

## Structural Shapes

| | |
|---|---|
| Pittsburgh, base | 1.60c |
| Philadelphia, del. | 1.76c |
| New York, del. | 1.85½c |
| Boston, del. | 1.98½c |
| Chicago, base | 1.70c to 1.80c |
| Cleveland, delivered | 1.78½c |
| Lackawanna, N. Y., base | 1.75c to 1.80c |
| Birmingham base | 1.75c to 1.80c |
| Pacific Coast, c.i.f. | 2.05c to 2.15c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Pittsburgh, base | 1.60c |
| Chicago, base | 1.70c |
| Birmingham base | 1.75c to 1.80c |
| Lackawanna, N. Y., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.00c |
| Cleveland, base, local del. | 1.65c |
| Cleveland base, out. del. | 1.65c |
| Philadelphia, del. | 1.89c to 1.94c |
| New York, del. | 1.93c |
| Boston, del. | 2.00c |
| Pittsburgh, cold finish | 1.85c |
| Pittsburgh, forg. qual. | 1.90c |

**RAIL STEEL**

| | |
|---|---|
| Chicago Heights | 1.60c |
| Eastern mills | 1.50c to 1.55c |
| Pittsburgh | 1.30c to 1.35c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.70c to 1.80c |
| New York, delivered | 1.93c |
| Philadelphia, delivered | 1.89c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.75c |
| Stock lengths, mill | 1.60c |
| Chi., billet | 1.60c to 1.80c |
| Chi., rail steel | 1.60c to 1.65c |
| Chi., rail steel, bridge and culvert | 1.60c to 1.65c |
| Philadelphia, cut lengths | 2.14c |
| Cleveland, cut lengths | 1.75c to 1.80c |

## Cold Finished Bars, Shafting

| | |
|---|---|
| Base, Pittsburgh, Chicago, Buffalo and Cleveland | 2.10c |
| Shafting, turned and ground, mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 21c | 22.5c | 25c | 30c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 7.00 to 7.50 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

Alloy Quality Bars, 2.65c, mill

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni. | 1.05 |
| 2100 | 0.55 | 5100 .80 - 1.10 Cr. | 0.45 |
| 2300 | 1.50 | 51.00 Cr. spring | 0.20 |
| 2500 | 2.25 | 6100 bars | 1.20 |
| 3100 | 0.55 | 6100 Spring | 0.95 |
| 3200 | 1.35 | Cr., Ni., Van. | 1.50 |
| 3300 | 3.80 | Carbon Van. | 0.95 |
| 3400 | 3.80 | 9250 (flats) | 0.25 |
| 4100 .15 to .25 Mo. | 0.50 | 9250 (rds.,sq.) | 0.50 |
| 4600 .20 to .30 Mo. | | | |

## Strip, Hoops Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.65c |
| Do, 6 1/16 to 24-in., Pitts. | 1.55c |
| Hot strip, bands 6 in. and under, Chicago | 1.75c |
| Do. 6 1/16 to 24 in. | 1.65c |
| Cooperage hoop, Pitts. | 1.70c to 1.80c |
| Do, Chicago | 1.85c to 1.95c |
| Cold rolled strip, Pitts., Cleve., 3 tons, over | 2.15c |
| Worcester, 3 tons, over | 2.30c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 20 to 45 lbs. | $22.00 to $26.00 |
| 50 to 75 | 20.00 to 24.00 |
| 80 to 100 | 24.00 to 27.00 |
| Light rails, 25-45, mills | $34.00 |
| Light rails, Chicago | $36.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.70c |
| Spikes, railroad, 7/16-in. and smaller, Pitts. | 2.70c |
| Spikes boat, barge, Pitts. | 2.90c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plate, mills | $39.00 |

## Bolts and Nuts

**Pittsburgh, Cleveland, Birmingham, Chi.**

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

**CARRIAGE BOLTS**

All sizes, cut thread ..... 73 and 10 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 and 10 off

**MACHINE BOLTS**

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off
Tire bolts, 60, 10 and 10 off.
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

Semifinished ..... 73 and 10 off

**HEXAGON CAP SCREWS**

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

**SQUARE HEAD SET SCREWS**

Milled ..... 80-5 off
Upset 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

## Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh ..... 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.
Chain, BB, BBB, 9/16-1½ in. ..... 33 1/3 off
Sheet piling, Pitts. ..... 1.90c

# Bars

**Pittsburgh Specifications Below July Rate—Western Mills Reflect Slight Auto Improvement**

BAR PRICES, PAGE 59

**Chicago**—If specifications keep up with the level of the last ten days, bar mill operations likely will be stepped up five points to 35 per cent again before the end of this month. A material gain in specifications is noted. While more cold rolled bar products and automotive parts have been ordered for Chrysler assembly, no appreciable gain in automotive orders is expected at least until Ford production gets under way. Soft steel bar prices are 1.70c, base, Chicago, few contract orders for more than 30 days ahead being closed. Bar orders are more diversified, although deformed bars for public work lead in shipments. One implement works putting out a new farm tractor model will resume at a fair rate next month. Others have no operating plans before late September or early October.

**Philadelphia**—Commercial steel bars are unchanged at 1.60c, Pittsburgh, with little test. Iron bars are nominally unchanged at 1.60c, Pittsburgh.

**Pittsburgh**—Steel bar demand remains quiet, showing considerable recession from the July rate. No increase in specifications from the automotive industry has appeared. Needs of miscellaneous consumers are light. Despite little new business, 1.60c, Pittsburgh, seems fairly well established.

**Cleveland**—Merchant steel bar price on a Cleveland base is being quoted without apparent deviation at 1.65c for both local and outside delivery. Sales continue to be small in size without noteworthy demand from any branch of consumer. Reports of a lower figure than 1.65c, Cleveland, outside delivered, are not confirmed, though soft steel bars are quoted on a Pittsburgh base of 1.60c when to the outside customer's freight advantage.

## Cold Finished Spot Sales In Moderate Gain

Cold Finished Prices, Page 59

**Pittsburgh**—More urgent demand for cold-finished steel bars is appearing for spot delivery. This, however, is in small volume. Releases against contracts continue light. Usually 2.10c, Pittsburgh, is quoted though little test is appearing.

**Cleveland**—Orders from the automotive and general manufacturing trades have been further curtailed by the inroads of plant vacations to add to generally low demand. The open market continues 2.10c, Cleveland base.

## Tin Plate Production Now at 50 Per Cent

Tin Plate Prices, Page 59

**Pittsburgh**—Tin plate shipments for the year to date are 10 to 15 per cent under the corresponding period of last year. Operations are slightly lower at approximately 50 per cent. Specifications are off moderately, according to the usual seasonal trend. Packing of the two leading vegetables, tomatoes and corn, will not enter its peak period for several weeks. It is estimated that the corn pack will be somewhat under that of last year. Tin plate continues $5, Pittsburgh, per base box. Tin mill black sheets now are quoted 2.50c to 2.60c, Pittstburgh.

## Peru Cuts Import Duty

Washington—In order to foster domestic industrial developments a Peruvian decree dated July 21 and published and effective Aug. 11, 1931, reduces substantially the rates of import duty on certain machinery replacement parts, classifying all the items affected under item 1581 of the Peruvian tariff, dutiable at the rate of 0.02 sol per gross kilo, according to Acting Commercial Attache Julian D. Smith, at Lima.

# Plates

**Small, Miscellaneous Orders Placed—Southwestern Tank Inquiry Light—Prices Unchanged**

PLATE PRICES, PAGE 59

**New York**—Another dull week has prevailed, with the usual prices on carlots 1.70c, Coatesville. Several fair sized jobs are in contemplation, however, including 20 tanks for the Grasselli Chemical Co., Grasselli, N. J. Between 300 and 400 tons of plates are pending for sprinkler and plumbing tanks for the Rockefeller radio city development, previously noted as contemplated. The East Jersey Pipe Co. has booked 670 tons of 72-inch pipe and fittings for the local board of water supply, for installation in Brooklyn. Spiniello Construction Co., Newark, N. J., is low on the general contract for laying and supplying 800 tons of 30-inch steel pipe for Kearney, N. J.

**Pittsburgh**—No increase is noted in requirements of plate consumers. Miscellaneous orders, which make up the bulk of demand, remain light. Demand from pipemakers continues to fall. Prices are holding fairly steady with producers quoting 1.60c on new business.

**Cleveland**—In spite of the fact that steel plate demand continues at low ebb, releases from the mills show occasional bulges. Several days of the past week were characterized by such inflows, caused by customers' sudden needs for material and quick shipping dates. Orders are of small size. Several plate fabricators have greatly reduced working hours. The 1.60c, Pittsburgh, price is the going market, and a 1.65c Cleveland base for railroad consumption only is nearly obsolete.

**Chicago**—Inquiry for 1100 tons of oil tank work in Oklahoma has enlivened the plate market, but no tank steel of consequence has been awarded. Contracting is light. Obligations largely are for material to be shipped within the next 15 to 30 days. Plate mill operations are barely 30 per cent.

### Contracts Placed

540 tons, 52-inch water pipe replacement project for Tacoma, Wash., to Birchfield Boiler Works, Seattle.
125 tons, oil and gas storage tank for Hancock Oil Co., Seattle terminals, to Seattle Boiler Works, Seattle.

### Contracts Pending

1000 tons, 60 and 72-inch welded steel pipe, Los Angeles. Bids opened.
350 tons of piling, for Erie, Pa., development of Pennsylvania state park and harbor commission, Harrisburg, Pa.
285 tons of piling, for municipal waterworks, Detroit.
110 tons, elevated steel tank and tower, Los Angeles general hospital. Bids opened.
100 tons, standpipe, Waltham, Mass.

Unstated tonnage, 20 tanks for Grasselli Chemical Co., Grasselli, N. J.; contemplated.

## Steel Plays Important Role in Airship Industry

(*Concluded from Page* 19)

steel, American Steel & Wire Co. for carbon and alloy steel wire, American Rolling Mill Co. for ingot iron, Westinghouse Electric & Mfg. Co. for electrical equipment and Ferry Machine Co., Kent, O., for processes for working stainless steel.

Steel's service to the infant airship industry does not end with the completion of the ship. On Sept. 23 bids will be closed by the navy department for 8000 tons of structural steel for a dirigible hangar at Sunnyvale, Calif. to house the navy's new craft. Additional equipment, including door mechanism, helium storage and transportation facilities, mooring mast, etc. will be required. Later provision will have to be made for the AKRON's sister ship, ZRS-5, construction of which has been authorized.

If the rigid dirigible becomes a reliable means of long distance transportation, the steel industry will be called upon for materials for a number of airship docks and hangars, considerable equipment for handling the indispensable helium, and steel for numerous accessories such as masts, grounding winches, etc. Also if the size of future craft increases much beyond the 6,500,000 cubic feet of gas volume in the AKRON, the problem of structural strength may result in a more extensive use of fine alloy steel. Perfection of American engines, comparable or superior to the famous Mayback units which Count Zeppelin employed, likewise will broaden the opportunity for fine American steels.

## Iron Mine Safety Studied

Bureau of mines, department of commerce, Washington, has published a study of safety standards at iron mines in the Lake Superior district, made by F. S. Crawford, district engineer at the bureau's safety station at Duluth. Suggestions for improving safety conditions also are made.

## Soviet Second in Tractors

Soviet authorities claim that their production of 14,344 tractors at the Putilov and the Stalingrad plants in the first half of 1931 put Russia in second place, second only to the Fordson plant at Cork, Ireland, which turned out 17,000 tractors in the first six months of 1931.

# Railroads

**Railroad Needs Light but Increasing—L. & N. May Buy 50,000 Tons Rails**

TRACK MATERIAL PRICES, PAGE 59

**New York**—The 500 freight cars, previously noted as contemplated by the New York Central, will be built at the Merchants' Despatch shops at Rochester, N. Y., should it be definitely decided to go ahead with the program.

The Pennsylvania railroad plans to resume its rail laying program in September.

Pennsylvania railroad is taking bids Sept. 1 on its fourth-quarter wheel requirements.

**Pittsburgh**—Cincinnati Union Terminal Co. took bids Aug. 11 on 4600 tons of rails, approximately 2000 tie plates, 3000 kegs of spikes and the necessary splice bars and bolts. Awards have not been made as yet. General demand for rails and track accessories continues at a slow pace. Reports current that the New York Central and Pennsylvania railroads would place considerable orders for rolling stock are discredited here. Tie plates hold at $39, Pittsburgh, and spikes at 2.70c, Pittsburgh.

**Cleveland**—Railroads' steel purchasing consists of meager fill-in lots without feature with releases running behind specified delivery dates on material contracted for some time ago.

Purchasing department of the Erie railroad is now centralized locally, having been moved here recently along with executive offices from New York.

Wheeling & Lake Erie has placed 10,000 tie plates with a Pittsburgh district mill.

**Chicago**—Reports of a substantial rail inquiry from the Southern Pacific are believed to be premature. No rail inquiry has appeared. A material gain in rail mill operations is likely to occur next month, as heavier releases are being made against spring rail orders. Releases now are more than 2000 tons weekly. From recent releases, it is indicated that more than 50 per cent of the early season's contract obligations will be specified. Track fastening releases are commensurate with the heavier rail shipping orders. Rumors are heard that a western road may order 2000 cars, but the carriers are not committing themselves on new rolling stock plans. Despite the large number of idle cars that have been stripped of parts, surpluses are heavy and hesitancy is shown about mapping out freight car building plans.

**Birmingham, Ala.**—Reports are current that the Louisville & Nashville railroad is making up an estimate for 50,000 tons of rails which will be placed with mills in this district. Another railroad is considering a division of business, with the Birmingham district to receive about 10,000 tons. The rail mill is down but four open-hearth furnaces have been kept in operation at Ensley works of Tennessee Coal, Iron & Railroad Co.

### Locomotives Placed

Jay Smith Connecting railroad, Brooklyn, N. Y., one 300-horsepower oil-electric locomotive, to American Locomotive Co., Dunkirk, N. Y.

Pennsylvania railroad, 20 locomotive tenders, to own shops at Altoona, Pa.

### Rail Orders Placed

South African State Railways, 7000 tons, 96-pound rails, to the Dominion Steel & Coal Corp., Sydney, N. S.

Wheeling & Lake Erie, 10,000 tie plates, to Carnegie Steel Co., Pittsburgh.

### Rail Orders Pending

Board of Transportation, New York, several hundred tons rails, frogs and switches for Concourse subway line, Bronx, N. Y.; taking bids.

Cincinnati Union Terminal Co., 4600 tons; bids taken Aug. 11, no award as yet. Inquiry also includes 2000 tie plates, 3000 kegs of spikes and necessary splice bars and bolts.

## Adopts Reinforcing Rules

Washington—Trade practice conference rules adopted by the reinforcing steel fabricating and distributing industry at the conference held in April, 1929, at Asheville, N. C., have been accepted by the industry following partial rewording by the federal trade commission. The commission declined to accept six rules proposed by the industry.

## Freight Lowest Since 1922

In the first half of 1931 freight traffic of railroads of the United States totaled 174,328,000,000 net ton miles, 17.9 per cent below the first half of 1930, 26.9 per cent under the first half of 1929 and the lowest since 1922, when the shopmen's strike interfered, states the bureau of railway economics.

# Structural Shapes

**Pending Items Boom—Illinois Highway Work, 16,100 Tons, Before Market—8200-Ton New Jersey Viaduct Up—Chicago Postoffice Deferred**

STRUCTURAL SHAPE PRICES, PAGE 59

**New York**—Fresh inquiry for structural steel is heavy with bids going in Aug. 31 on 8200 tons for another section of the northern New Jersey viaduct. William Kennedy Co. is reported low on the Bronx county courthouse, the project taking 7000 tons. Pending tonnage on which bids go in within the next few weeks is the heaviest of the year. New York state highway bridges call for 1000 tons and a like volume will be required for buildings at the Pilgrim state hospital. Plain material prices are steady at 1.70c, nearest mill.

**Boston**—About 600 tons of structural are pending, the largest being 300 tons for a roof garden on the motor mart, while 175 tons will go into an addition to the Five Cent Savings bank building, Boston. Two small bridges for Quincy, Mass., call for 120 tons.

**Philadelphia**—Leading structural sellers continue to adhere to 1.70c, eastern mill. Structural buying is exceedingly light.

**Pittsburgh** — Specifications for structural material show little change, reflecting the low rate of building activity. Further recession is shown from the slow July rate. New awards are scattered and in light tonnage. Shapes usually are quoted 1.60c, Pittsburgh.

**Cleveland**—About 400 tons of structurals for state bridge work go in Aug. 21. Cleveland will build a 300-ton playground building. Structural awards are dull. Mills are quoting 1.60c, Pittsburgh, on plain material, or 1.785c, delivered Cleveland.

**Chicago**—Although official award of the general contract for the Chicago post office has been deferred while the difference between government estimates and the contractor's figures were ironed out, little delay is expected in letting the 45,000 tons of structural steel. A few contracts for plain material covering future work have been let on the basis of 1.65c to 1.70c, Chicago. Seven units of the general exposition buildings of the Chicago Century of Progress, 2000 tons, will be out soon. Figures also will be asked shortly for 2000 tons for a junior high school in Chicago. About 7500 tons is active for the Thirty-fifth street viaduct, Milwaukee. Four field houses are to be built in parks, under the supervision of South Park commissioners, Chicago, costing about $1,000,000. Receipt of bids for 2000 tons of Illinois bridge work has been postponed tentatively until Sept. 1 because of union labor injunction proceeding. About 16,100 tons of Illinois highway and waterway work may be up Aug. 24.

**Birmingham, Ala.** — Plenty of small tonnage orders are being received and shops are operating five and six days a week. Bridge work for railroads as well as highway development presents bright prospects.

## Contracts Placed

1250 tons, school, St. George, Staten Island, N. Y., to Easton Structural Steel Co., Easton, Pa., through Royal Rice Co., contractor.

1200 tons, hotel, Hershey, Pa., to Bauman Iron Works, Reading, Pa.

830 tons, apartment 101, Lafayette avenue, Brooklyn, N. Y., to Harris Structural Steel Co., New York.

575 tons, building, National Screen Service Inc., New York, to McClintic-Marshall Corp., Bethlehem, Pa.

550 tons, bridge near Crafton, N. Y., to Shoemaker Bridge Co., Pottstown, Pa.

500 tons, George M. Brewster building, Bogota, N. Y., to F. J. Mullaney Iron Works, New Brunswick, N. J.

500 tons, tractor division extension for Allis-Chalmers Mfg. Co., Milwaukee, to Wisconsin Bridge & Iron Co., Milwaukee.

425 tons, bridge over Spanish creek, Plumas county, Calif., to Pacific Coast Engineering Co., Oakland, Calif.

400 tons, bridge, Baltimore, to Bartlett-Hayward Co., Baltimore.

400 tons, dental building, University of Minnesota, Minneapolis, to Crown Iron Works, Minneapolis.

400 tons, highway bridge at Big Horn, Mont., to Minneapolis-Moline Power Implement Co., Minneapolis. Previously reported to unstated.

305 tons, service station, Brooklyn, N. Y., to National Bridge Works, Long Island City, N. Y.

300 tons, highway bridge, Richland, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

250 tons, boiler house, Niagara Falls, N. Y., to American Bridge Co., Pittsburgh.

250 tons, memorial chapel, Harvard university, Cambridge, Mass., to Palmer Steel Co., Springfield, Mass.

230 tons, bridge, Afton, N. Y., for Delaware & Hudson railroad, to McClintic-Marshall Corp., Bethlehem, Pa.

220 tons, section 6, Maywood Park, N. J., to Oltmer Iron Works, Hoboken, N. J.

200 tons, fruit warehouse for Minneapolis & St. Louis railroad, to Minneapolis-Moline Power Implement Co., Minneapolis.

200 tons, Y. W. C. A., San Francisco, to Judson-Pacific Co., San Francisco.

200 tons, pipe shop, Mare island, Calif., to Golden Gate Iron Works, San Francisco.

190 tons, bridge, Osceola, Mo., to St. Joseph Structural Steel Co., St. Joseph, Mo.

140 tons, wharf work, Port of New Orleans, to Virginia Bridge & Iron Co., Roanoke, Va.

125 tons, bridge, Pennsylvania railroad, to American Bridge Co., Pittsburgh.

125 tons, high school, Souderton, Pa., to Kirby Iron Works, Dansdale, Pa.

125 tons, highway bridge, New York state, to American Bridge Co., Pittsburgh.

120 tons, bridge, Pomfret, Conn., to American Bridge Co., Pittsburgh.

110 tons, bridge No. 243, Highbridge, N. J., to Phoenix Bridge Co., Phoenixville, Pa.

100 tons, Pier 39, San Francisco, to Judson-Pacific Co., San Francisco.

100 tons or more, school for boys, Meriden, Conn., to Eastern Bridge & Structural Steel Co., Worcester, Mass.; Merritt-Chapman Scott Corp., Providence, R. I., contractor.

Unstated tonnage, government elevator, St. John's harbor commission, St. John's, N. B., to Dominion Bridge Co., Lachine Locks, Que.

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 9,920 |
| Awards last week | 24,904 |
| Awards two weeks ago | 11,327 |
| Awards this week in 1930 | 50,511 |
| Av. weekly awards, 1930 | 35,242 |
| Av. weekly awards, 1931 | 35,155 |
| Av. weekly awards, July | 29,337 |
| Total awards to date, 1930 | 1,214,698 |
| Total awards to date, 1931 | 1,195,284 |

## Contracts Pending

16,100 tons, Illinois highway and waterway work, including 8000 tons of scattered highway bridges; 4100 tons, bridge at Seventy-ninth street and Manheim road, Chicago; 2000 tons, bridge at Peoria, Ill.; and 2000 tons, Illinois waterway at Joliet, Ill; bids Aug. 24.

8200 tons, superstructure highway viaduct and ramp, route 25, connecting link, sections 7, 7A and 8, Newark, N. J.; bids Aug. 31. Work also includes 310 tons steel castings and 6600 lineal feet railing, New Jersey state highway project.

2900 tons, engineers shops, Duncan field, San Antonio, Tex.

2000 tons, Devorak junior high school, Chicago.

2000 tons, college buildings, Colby college, Waterville, Me.

1200 tons, university bridge approaches, Seattle; plans in preparation; bids probably early October.

1000 tons, highway bridges, New York state.

1000 tons, buildings, Pilgrim state hospital, Long Island, N. Y.

600 tons, highway bridge, Naches, Wash.

600 tons, Pepsodent Co. plant building, Chicago.
600 tons, bridge, Ashland, Ky.
600 tons, auditorium and school, Battle Creek, Mich.
550 tons, caisson cylinders, for Detroit Edison Co., Detroit.
550 tons, state highway bridge, Two Rivers, Wis.; bids close Aug. 27.
520 tons, two state bridges over Naches and Yakima rivers, Wash.; bids Aug. 18.
500 tons, penstock, Central Point, Oreg.
500 tons, court house, Harrison county, Pa.
500 tons, Lafayette avenue bridge, Baltimore.
500 tons, Ashcroft, B. C., bridge; bids at Victoria, B. C., Aug. 24.
500 tons, building for Freedom Oil Works, Freedom, Pa.
350 tons, First National Bank building, Ithaca, N. Y.
320 tons, bridge over Hocking river, Athens, O., for Ohio state department of highways; O. W. Merrill, state highway director, Columbus, O.; bids Aug. 21.
314 tons, bridgework, Purcell, Okla., for Oklahoma highway commission; bids rejected account decision to build temporary wooden bridge.
300 tons, school, Hanover, Pa.; O. H. Mostetter, Hanover, contractor.
300 tons, city playground building, Cleveland.
300 tons, Hutzler Bros. store, Baltimore.
300 tons, bank building, Utica, N. Y.
300 tons, roof garden for Motor Mart, Boston.
300 tons, postoffice, Potsdam, N. Y.
275 tons, Tenth street viaduct, Kansas City, Mo.
250 tons, I-beam spans, Putnam county, Mo.
225 tons, deck plate girder spans for Chicago, Burlington & Quincy railroad, Chicago.
210 tons, Milwaukee-Racine county grade separation; bids close Aug. 25.
200 tons, high school, Pottsville, Pa.; bids this week.
180 tons, hangar, Dallas, Tex.
175 tons, addition to Five Cent Savings Bank building, Boston.
175 tons, normal school, Oneonta, N. Y.
150 tons, I-beam spans, Madison county, Ill.
120 tons, two bridges, Quincy, Mass.
102 tons, bridge near Elyria, O.; bids Aug. 20.
100 tons, school, Campbell, N. Y.
100 tons, school, Schroon Lake, N. Y.
100 tons, dormitory, Staunton Military Academy, Staunton Va.

## Employment and Payrolls Show Reduction for June

Washington—Employment in 194 steel and iron plants in June, representing 213,774 at work, was 4.8 per cent less than in May, according to the bureau of labor statistics' current report. June payrolls—$4,889,702—were 12.9 per cent lower.

Forty-five cast iron pipe plants reported a reduction of 2.9 per cent in employment and 12 per cent in payrolls. Structural steelworks numbering 174 reported employment reduced 1.8 per cent; and payrolls, 3.4 per cent. Employment in 151 machine tool plants dropped 5 per cent, and payrolls 7.2 per cent.

# Concrete Bars

**Cook County Nurses' Home, 1200 Tons, Heads Awards—3000 Tons Illinois Road Work Let This Week—Rail Steel Building Price Sags in West**

REINFORCING BAR PRICES, PAGE 59

**Chicago**—General contracts for about 3000 tons of Illinois road work will be let this week. Much of this is resulting from the necessary readvertising of bids to comply with the new Illinois wage rate law. More than 100 projects of 25 to 75 tons each are before the market. As low as 1.35c has been quoted for building work by rail steel sellers, although the rail steel road, bridge and culvert prices are steady.

**New York**—An advance of $1 a ton to 1.65c, Pittsburgh, on mill lengths is announced, local distributors holding firm on this basis. A large volume of work is before the market, although highway mesh is slower, except in New Jersey where considerable tonnage remains to be placed.

**Boston**—About 250 tons of concrete bars was contracted for in the New England district the past week. The only round lot in this was for 100 tons for the Boston professional arts building. Prices remain soft.

**Philadelphia** — Reinforcing bars are off $1 a ton to 1.55c, Pittsburgh. Business is generally light and includes a substantial proportion of foreign-produced bars.

**Buffalo**—Nearly 1000 tons of inquiry for reinforcing bars is reported this week, with more than 2500 tons of previously reported inquiry still to be covered. Welded fabric sales are holding up well considering the lateness of the season for road construction.

**Pittsburgh**—Reinforcing bar sales show a seasonal falling off with awards considerably under the July level. Inquiry continues light with most jobs limited to small tonnages. Mill lengths are holding at 1.60c, Pittsburgh.

**Cleveland**—About 400 tons of reinforcing steel will be required in three state bridges to be let Aug. 21. About 1000 tons is up on Nine Mile Creek culverts. Joseph T. Ryerson & Son took the juvenile courts reinforcing steel through E. G. Mathewson.

**Birmingham, Ala.**—Contracts for reinforcing concrete bars are small but are numerous. Road building projects are being figured on for larger requirements in near future.

Government work features recent inquiry. Bids are closing Aug. 28 on 2500 tons for a warehouse, department of public buildings and parks, Washington.

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **7,731** |
| **Awards last week** | **3,444** |
| **Awards two weeks ago** | **5,106** |
| **Awards this week in 1930** | **7,312** |
| **Av. weekly awards, 1930** | **6,990** |
| **Av. weekly awards, 1931** | **7,054** |
| **Av. weekly awards, July** | **6,759** |
| **Total awards to date, 1930** | **230,193** |
| **Total awards to date, 1931** | **239,852** |

## Contracts Placed

1200 tons, addition, Cook county nurses' home, Ill., to unstated, through Mutual Construction Co., Chicago.
1100 tons, Cincinnati Times-Star Publishing Co. building, Cincinnati, to Jones & Laughlin Steel Corp., Pittsburgh, through Ferro-Concrete Co., contractors, Cincinnati.
800 tons, sewage plant, Philadelphia, to Taylor-Davis Co., Philadelphia.
560 tons, St. Mary's hospital, Racine, Wis., to unstated.
400 tons, Pennsylvania railroad Thirtieth street station, Philadelphia, to American Steel Engineering Co., Philadelphia.
381 tons, Los Angeles, to Blue Diamond Co., Los Angeles.
375 tons, postoffice, Louisville, Ky., to Laclede Steel Co., St. Louis.
325 tons, Humboldt Park substation, Commonwealth Edison Co., Chicago, to American System of Reinforcing, Chicago.
300 tons, postoffice, Louisville, Ky., to Laclede Steel Co., St. Louis.
250 tons, veterans' hospital, Salt Lake City, Utah, to Concrete Engineering Co., Los Angeles.
250 tons, post office, Salt Lake City, Utah, to Concrete Engineering Co., Omaha, Neb.
230 tons, highway route S 28, section 1, Middlesex county, N. J., to Truscon Steel Co., Youngstown, O., through Ross & Taylor Co.
225 tons, highway route 8, section 7, Warren county, N. J., to Truscon Steel Co., Youngstown, O., through Salmon Bros.
180 tons, juvenile courts group, Cleveland, to Joseph T. Ryerson & Son Inc., Chicago, through E. G. Mathew-

(*Concluded on Page 67*)

# Strip

**Market Generally Quiet—Two Automotive Interests Releasing —Prices Well Stabilized**

STRIP PRICES, PAGE 59

**Pittsburgh**—Fair releases for strip steel have been received by local producers from two leading automotive interests in Detroit. Otherwise demand continues at recent low levels. Requirements of most consumers lack improvement. Operations remain at a slow pace. Prices, however, are firm with hot-rolled strip quoted 1.55c and 1.65c and cold-rolled strip, 2.15c.

**New York**—Strip demand remains light, with prices firm on hot-rolled at 1.55c, Pittsburgh, for wide, and 1.65c for narrow. Cold-rolled strip is 2.15c, Pittsburgh, on the general run of business.

**Philadelphia**—Hot-rolled strip demand is slack but the price is firm at 1.55c and 1.65c, Pittsburgh, for wide and narrow. Cold-rolled strip is 2.15c, Pittsburgh.

**Cleveland**—In line with automobile manufacturing schedules, releases from the mills for hot and cold-rolled strip continue light. Buyers are well scattered. Hot prices seems well pegged on what little orders are placed at 1.55c and 1.65c, Pittsburgh, for wide and narrow. Cold-rolled is extremely quiet to the hardware and metal specialty trade and is quoted 2.15c, Cleveland.

**Chicago**—Cold-rolled strip mills are barely 20 to 25 per cent. Shipments to automotive plants again have declined. The 2.15c, Pittsburgh-Cleveland, price holds.

## Operations Up Over Point In Week to 33.5 Per Cent

**Youngstown, O.**—Steel operations advanced one point this week to 43 per cent. Active open hearths are 29 of the 66 available. Republic Steel activity is at 35 per cent. Sheet & Tube production holds at 37, based on raw steel output, while Carnegie Steel mills are being maintained for another week near the 45 per cent level. Sharon Steel Hoop operations are at 34 per cent.

**Philadelphia**—Eastern ingot activity is unchanged from last week at 32 per cent capacity. A leading mill is steady at 33 per cent.

**Buffalo**—Operations declined this week to 27 per cent, down five points, with only ten of the 37 available open hearths making steel. In the Donner plant operations were completely suspended this week.

**Pittsburgh**—Steelmaking operations remain fairly steady at the nigher rate of 30 to 35 per cent attained last week. Sheet production holds at about 35 per cent. Tin plate output is again off slightly at 50 per cent. Pipe mills are operating at slightly above 30 and strip averages 15 to 20 per cent. Twelve of the district's 54 blast furnaces remain in operation.

**Cleveland**—With the addition of four open-hearths at the Otis Steel works, ingot activity is up 12 points this week to 33 per cent capacity. Eleven of 34 open hearths in all are in operation.

| | Per Cent |
|---|---|
| Operations this week | 33.5 |
| Operations last week | 32 |
| Operations two weeks ago | 30 |
| Operations this week, 1930 | 55 |
| High for 1931, (March 19) | 57 |
| Low for 1931, (July 23) | 30 |

**Chicago**—Slightly increased open-hearth activity has raised ingot production fractionally to 30 per cent. Only eight of the district's 36 steel works blast furnaces are active, as the Joliet stack still is out. Rail mill operations are likely to be increased materially next month.

**Birmingham, Ala.**—Ingot production is being held fairly steady with 11 of 23 open-hearth furnaces being maintained, operations continuing 40 per cent of capacity.

## Warehouse Sales About On a Parity With July

Warehouse Prices, Page 80

**New York**—No action has yet been taken on blue annealed sheet width extras now under consideration in the local warehouse market. Prices generally are unchanged and volume is about on a parity with July. One large jobber reports a slight increase over July.

**Boston** — Warehouse materials continue to move in moderate volume. The amount of business in the past few weeks has been slightly easier.

**Buffalo**—Demand in keeping with retarded mill sales is experienced. Some material used in building construction is selling more briskly.

**Philadelphia**—Business is dull and unchanged. The general rate is down from July. Prices are steady.

**Pittsburgh**—Business so far this month has continued at the poor rate of late July, when orders declined sharply. Only small lots are appearing. Prices are unchanged.

**Cincinnati**—Individual warehouse sales are small but the aggregate will show tonnage comparable to July.

**Chicago**—Hot pressed and hexagon semifinished nuts in less-keg lots are now 70 off from stock. Shipments of steel products from warehouse stocks are a shade better.

**St. Louis**—Typical summer quietness obtains in the steel jobbing trade. Aside from a limited number of seasonal commodities, demand remains in small volume and covers only immediate requirements.

## Semifinished Demand Smaller Than In July

Semifinished Prices, Page 70

**Pittsburgh**—Sheet bars continue quiet, with shipments off considerably from the July volume. Billets and slabs are in light demand. New orders are small and for prompt needs. Quotations are firm at $29 for rerolling billets, slabs and sheet bars, with forging billets and wire rods $35.

**Youngstown, O.**—As sheet and strip mills in this district are operating at low rates there is not much opportunity for more than a corresponding movement of sheet bars and billets. With 22 independent open-hearth furnaces starting this week, of a total of 51, the rate of steelworks operations is about 43 per cent for the district. Billets, sheet bars and slabs bring $29, Youngstown and Pittsburgh.

**Cleveland**—Shipments are lighter than in July, no improvement being noted recently in requirements for the automotive industry. Sheet bars, billets and slabs hold at $29, Cleveland and Youngtown, O. The leading merchant producer continues to operate three of its 14 open hearths.

**Chicago**—Semifinished steel is quiet. Contracting and shipments have tapered materially this month. Forging billets are quoted $35 to $36, Chicago. Some sales of wire rods have been made at $35, Pittsbrugh, Cleveland, and $36, Chicago.

## Concrete Bars Placed

(*Concluded from Page* 63)

son, Cleveland; J. L. Hunting Co., contractors.

155 tons, Grays Harbor county bridge, Wash., Seattle Children's home and Hancock Oil Co. terminals, Seattle, to Northwest Steel Rolling Mills, Seattle.

150 tons, swimming stadium, exposition park, Los Angeles, to unnamed interest.

150 tons, welfare home, Wayne, N. J., to Truscon Steel Co., Youngstown, O.

140 tons, cut length bars, Metropolitan Life Insurance Co. building, New York, to Rawlins Steel Co., New York.

125 tons, hospital, Sixth and St. Louis streets, Los Angeles, to unnamed interest.

115 tons, highway, route 2, section 6, New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, Oceanographic building, Seattle and Shelton, Wash., school, to Pioneer Sand & Gravel Co., Seattle.

100 tons, professional arts building, Boston, to Concrete Steel Co., New York.

100 tons, hospital wing, Fresno, Calif., to Kyle & Co., Fresno, Calif.

100 tons, sewers, Queens, New York, to National Bridge Co., Brooklyn, N. Y.; Kennedy-Smith Co., Contractors.

## Contracts Pending

4000 tons, Calumet sewage treatment works for Chicago sanitary district, Chicago; W. J. Newman Co., Chicago, low bidder on general contract.

2500 tons, warehouse, department of public buildings and parks, Washington; bids close Aug. 28.

1500 tons, municipal pumping station, Memphis, Tenn.; Jerome Uteley, Memphis, low on general, one section. Fairly substantial structural and steel pipe lots also required.

1000 tons, double conduit sewer, Nine Mile creek from St. Clair avenue to East 152nd street, Cleveland; bids close Aug. 19.

500 tons, warehouse, Ninth and Alameda streets, Los Angeles; bids being taken.

400 tons, buildings for home economics school, Cornell university, Ethaca, N. Y.; plans being drawn, New York state architect's office, Albany, N. Y.

246 tons, highway work, Tulare county, Calif.; bids opened.

200 tons, mesh, Buffalo-Lancaster, N. Y., highway project; Liberto & Cerullo, Depew, N. Y., contractors.

200 tons, Madden dam, Panama canal commission, Washington; project also takes a considerable tonnage of sheet piling.

150 tons, bridge over Hocking river, Athens, O., for Ohio state department of highways; O. W. Merrill state highway director, Columbus, O.; bids Aug. 21.

125 tons, addition, Washburn-Crosby flour mill, Buffalo.

125 tons, structures, Hamilton county highway improvement, for Ohio state highway departmnt; O. W. Merrill, state highway director, Columbus, O.; bids Aug. 21.

112 tons, two bridges over Bull Run, near Miami Siding, O., for Ohio state highway department; O. W. Merrill, state highway director, Columbus, O.; bids Aug. 21.

100 tons, bridge over Verdugo wash, Glendale, Calif.; bids Aug. 20.

100 tons, memorial building, Guadalupe, Calif.; bids opened.

---

**Railroads in the United States in 1911 paid over 98 million dollars in taxes. In 1930 this had increased to** more than 348 millions. In the same period cash dividends increased from $397,068,724 to $495,846,351.

---

## Building Expands in Some Districts in July

Moving slightly against an established seasonal trend, several sections of the country produced higher construction contract awards in July than in June. F. W. Dodge Corp., New York, finds that the New England, upstate New York, Middle Atlantic, Pittsburgh and Chicago territories are included in this category.

Despite a decline in the total valuation of such contracts in the 37 states east of the Rockies, these large areas registered a go-ahead over June in July when they would normally be expected to drop behind June. The total for July was $285,997,300 and was divided among the three major construction classes as follows: $116,265,500 in public works and utilities; $105,839,500 in non-residential building; and $63,892,500 in residential building.

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## International Aluminum Cartel Likely To Fall

Washington—Indications point to the dissolution of the international aluminum cartel when the present agreement expires Dec. 31, 1931, according to a report from Consul William E. Beitz, Berlin, to the department of commerce. The most important aluminum producers of Germany, France and England and at least one each from Switzerland, Austria and Norway form the combine.

Difficulties have arisen since the formation of the cartel in 1926, the report states, especially in connection with reaching an agreement as to the contingents on the European markets. In 1926, world production of aluminum amounted to 195,400 metric tons, of which 111,800 tons were accredited to the European producers. Of the 273,490 metric tons produced in 1930, not more than 50 per cent came from European plants, owing to the expansion of American interests, it is pointed out.

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Revenue passengers carried on railroads in the United States in 1930 were 25 per cent fewer than in 1911 and revenue passengers carried one mile, a railroad unit of measure, decreased 17 per cent. In 1920 the former figure had increased 32 per cent and the latter 45 per cent over 1911. The automobile began to reach its greatest growth in 1920.

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Average capacity of freight cars in the United States has increased 26 per cent since 1911 and total capacity of all freight cars has increased 36 per cent in the same period.

# Pipe

**Two Large Cast Lots Placed in New England—Orders for Steel Pipe Quiet**

PIPE PRICES, PAGE 80

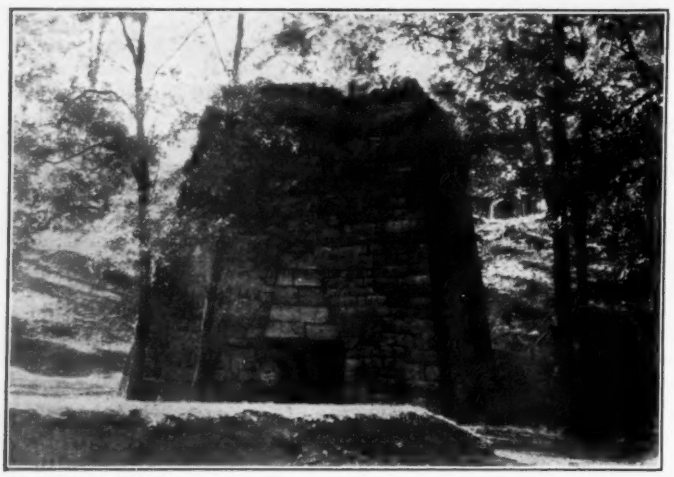
**New York**—Recent steel pipe awards include 670 tons of 72-inch pipe for local department of water supply. Spiniello Construction Co., Newark, figuring on lock bar steel pipe, is low on the general contract for supplying 800 tons of 30-inch pipe for Kearny, N. J. Close to 1800 tons of cast pipe are up for bids for several upstate points. Figures went in this week on about 2000 tons for Wayne township, N. J. Prices are easy, large lots bringing out concessions.

**Boston**—Two sizable contracts for pipe were placed in the past week. Hartford, Conn., awarded the 1600 tons of 6 to 16-inch to the American Cast Iron Pipe Co., while Medfield, Mass., placed 1940 tons with the United States Pipe & Foundry Co.

**Pittsburgh**—Line contemplated by Lycoming Natural Gas Co. from Tioga, Pa., to Syracuse, N. Y., still is pending, tonnage unstated. Pipe mill operations currently hold at around 30 to 35 per cent capacity.

**Chicago**—Chicago sanitary district has received bids for about 1200 tons of miscellaneous sized pipe for the Calumet sewage treatment works. This will be ordered through contractors. Barberton, O., is taking bids for 1300 tons of 24-inch pipe. Bids disclose Chicago delivered quotations of $4 to $6 a ton under recent prices for the larger quantities.

Extension of the Texas-Chicago 900-mile pipe line to Milwaukee, northern



*Courtesy A. R. Pafenbach*

# A Service Rendered

Old Ross Mountain Furnace, Westmoreland County, Pennsylvania, shown at left, is one of the antiquated iron furnaces, a few of which may still be found secreted among the hills of Western Pennsylvania. They are symbolic of a distinct contribution to mankind and are representative of the early endeavors made in the iron and steel industry. Although, now but a part of the history of one of America's colossal industries, these old time furnaces have performed an invaluable service.

# AMERICAN

THE MARK OF

## Sheet Metal (AMERICAN SHEET AND TIN PLATE COMPANY PITTSBURGH TRADE MARK REG. U.S. PAT. OFF.) Excellence

FOR many years, AMERICAN Steel Sheets have successfully fulfilled the requirements of users in every field of human endeavor. The established reputation of American products for *reliability and excellence* is indicative of a *service* well performed. These sheets represent highest quality standards, and are correctly manufactured in every detail—both mechanically and metallurgically.

**AMERICAN Products are supplied in Black and Galvanized Sheets, Cold Rolled Sheets, Automobile Sheets, Electrical Sheets, Keystone Rust Resisting Copper Steel Sheets; Culvert and Flume Sheets; Galvannealed Sheets, Formed Roofing and Siding Products, Special Sheets for all known purposes, Tin and Terne Plates, Black Plate, and U S S Stainless and Heat Resisting Steel Sheets and Light Plates.**

US STEEL

## American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

KEYSTONE AMERICAN

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

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Federal Shipb'ldg. & Dry Dock Co.
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & Railroad Co.
Universal Atlas Cement Company

*Pacific Coast Distributors*—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Illinois and the Northwest is expected to be undertaken soon.

**Birmingham, Ala.**—Several lettings are to be distributed this week. Shops are operating approximately 50 per cent of capacity. Shipments are steady and effort is being made to hold down both raw material and finished stock on shop yards.

## Cast Pipe Placed

1940 tons, 6 to 16-inch, Medfield, Mass., to United States Pipe & Foundry Co., Burlington, N. J.
1600 tons, 6 to 16-inch, Hartford, Conn., to American Cast Iron Pipe Co., Birmingham, Ala.
600 tons, 6 to 20-inch, for Madison, Wis., sewage treatment works, to United States Pipe & Foundry Co., Burlington, N. J.
200 tons, 16-inch pipe for Glencoe, Ill., awarded through contractor.
137 tons, 16-inch class C, San Diego, Calif., to C. G. Claussen & Co., San Francisco.
127 tons, 8 to 10-inch class B, sewer, Artesia street, Los Angeles, to unnamed interest.
24,000 feet, 6 and 8-inch water pipe, Richburg, N. Y., to United States Pipe & Foundry Co., Burlington, N. J., on bid of $11,306.

## Steel Pipe Placed

670 tons, 72-inch steel pipe, board of water supply, New York, awarded through Bronx Waterway Corp., that city, to East Jersey Pipe Co., New York.

## Cast Pipe Pending

2000 tons, 6 to 14-inch, for Wayne township, N. J.; bids in.
1300 tons, 24-inch, for Barberton, O.; bids in.
1200 tons, miscellaneous sizes for Chicago sanitary district's Calumet sewage treatment works, second unit.
635 tons, 16 to 24-iuch for Kenosha, Wis.; bids close Aug. 27.
207 tons, 20-inch class 250, San Bernardino, Calif.; bids opened.
100 tons, 8 and 12-inch, class B, Inglewood, Calif.; bids opened.

## Steel Pipe Pending

800 tons, 30-inch, Kearny, N. J., Spiniello Construction Co., Newark, N. J., low on general, estimate based on lock bar steel pipe.

## Foundry Congress in Italy

Plans for the International Foundrymen's congress to be held in Italy, Sept. 12-27, recently have been announced. The program is extensive and includes a schedule of meetings, sightseeing trips to points of interest and a plant visitation program to industries in many industrial centers throughout Italy.

Cosmo Metal Alloys Corp., New York, has changed its capitalization from $3000 to 300 shares preferred at $100 each and 300 shares no par value.

# Wire

**Demand Shows No Improvement Over July—Market Tone Is Stronger in East**

WIRE PRICES, PAGE 59

**Worcester, Mass.** — A slightly stronger tone developed in the wire market during the past week. Plants of American Steel & Wire Co. here report an increase in general orders. Mills at New Haven, Conn., and Trenton, N. J., show low production.

**Pittsburgh**—Little new business is appearing for wire products. Specifications and shipments are fairly steady but no improvement over July is seen. Road construction brings a fair demand for wire mesh. Manufacturers' wire and jobbing products continue slow. Jobbers' stocks are small. Prices appear well stabilized at 2.20c for plain wire to the manufacturing trade, and at $1.90 to jobbers and $2 to the merchant trade for standard wire nails. Wire rods hold at $35.

**Cleveland**—Wire and nail sales are decidedly dull. Occasionally fairly sizable lots are placed, but their number is restricted to the few larger consumers. Even the fairly frequent number of carload lots to country jobbers of fencing and other wire products are in diminished number. Prices are without pressure in the face of light demand at $1.90 and $2.00 a keg for nails; 2.20c for plain wire; and 3.20c, for spring wire.

**Chicago**—Moderate improvement is noted over the late July volume of merchant wire products, but August business so far is off from last year. Farm buying in north central states is not likely to come up to earlier expectations. Southern jobbers order more fencing material. The $1.90 wire nail price is nominal. Manufacturers' wire sales are negligible. No fresh buying is in sight. Wire mills operate 20 to 25 per cent.

# The Business Week In Washington

FEDERAL power commission has announced that it has undertaken a full engineering and economic study of the entire electrical industry of the United States.

□ □ □

In announcing the co-operation of the department of commerce in the conduct of the National Institute for Commercial and Trade Association Executives, F. M. Feiker, director of the bureau of foreign and domestic commerce, stresses the basic importance of the American trade associations in economic planning for business stabilization.

□ □ □

A survey of foreign trade movements by the shipping board shows that in 1929 American vessels carried nearly 40 per cent of our total water-borne foreign commerce.

□ □ □

Unemployment insurance hearings to have been held next month before a special senate committee probably will be abandoned, it is stated by Senator Herbert, of Rhode Island, chairman.

□ □ □

Senator Blaine, of Wisconsin, is urging the President to call a special session of congress next month to deal with the unemployment situation.

□ □ □

In the determination of loss or gain, the bureau of internal revenue has issued an amendment to the rule in regard to carrying charges on unproductive property.

□ □ □

The Muscle Shoals commission is asking for bids by Sept. 1 on operating proposals. It is stated that none of the bids will be accepted but they are merely "informative." They will be submitted to the President.

□ □ □

Senator Moses, of New Hampshire, chairman pro tem of the senate, has come out as flatly opposed to any dole system being established in the United States.

## Franklin Mill on Full

Buffalo—The 18-inch mill of the Chicago Railway Equipment Co. at Franklin, Pa., near here, was placed on a full time schedule this week for the first time in two years. It was reported unofficially the company has taken an order for 10,000 brake beams for the Erie railroad.

Cornell Johnson Forge Co., Chicago, has changed its name to Cornell Forge Co. Office is at 1315 Monadnock building.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, No. 2**

| | |
|---|---|
| Chicago furnace | $17.50 |
| Pittsburgh, dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Philadelphia, delivered | 16.76 to 17.26 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 17.50 |
| Buffalo, fur., local del. | 17.00 |
| Buff., all-rail, Boston | 19.91 to 20.91 |
| Buff., all-rail, Brooklyn | 19.91 to 20.91 |
| Buff., all-rail Newark | 18.28 to 18.78 |
| Ala., Bir. fur., local del. | 12.00 to 13.00 |
| Alabama, del. Chicago | 17.01 |
| Alabama, del. St. Louis | 15.42 |
| Alabama, del. Cincinnati | 14.69 to 15.19 |
| Ala., Phila., dock del. | 16.25 |
| Ala., Balt., dock del. | 16.00 |
| Alabama, New York dock | 16.50 |
| Ala., Boston dock del. | 16.75 |
| Tenn., Bir. base, local del. | 13.00 |
| Tennessee, del. Cinn. | 14.69 to 15.19 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 17.50 |
| Buff., all-rail, Brooklyn | 20.91 to 21.41 |
| Buffalo, all-rail Newark | 18.78 to 19.28 |
| Buff., all-rail, Boston | 20.91 to 21.91 |
| Virginia furnace | 18.25 |
| Eastern, del. Phila. | 17.26 to 17.76 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 18.50 |
| Eastern, del. Phila. | 17.76 to 18.26 |

**MALLEABLE**

| | |
|---|---|
| Valley furnace | 17.00 |
| Cleveland fur., local del. | 17.00 |
| Pittsburgh dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Chicago, furnace | 17.50 |
| Buffalo fur., local del. | 17.50 |
| Eastern Penna., delivered | 18.26 to 20.41 |
| Granite City, Ill., fur. | 17.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh, district fur. | 16.00 to 16.50 |
| Pittsburgh, delivered | 16.63 to 17.63 |
| Eastern Penn., del. | 16.75 |
| Buffalo fur., local del. | 16.50 to 17.00 |
| Montreal, delivered | 20.50 |
| Valley, furnace | 17.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 17.00 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Pittsburgh, furnace | 17.50 |

**LOW PHOS.**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 23.76 to 26.79 |
| Copper-bear., E. Pa. fur. | 21.50 to 23.00 |

**GRAY FORGE**

| | |
|---|---|
| Valley furnace | 16.50 |
| Pittsburgh district fur. | 17.00 |
| Pittsburgh, delivered | 17.63 to 18.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chi. | 27.04 |

**SILVERY**

Jackson County, O., fur. in per cents: 6—$20; 7—$20.50; 8—$21; 9—$21.50; 10—$22; 11—$23; 12—$24; 13—$26.

**BESSEMER FERROSILICON**

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$24; 16—$33.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.40 to 2.50 |
| Connellsville foundry | 3.25 to 4.50 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | 8.70 to 9.10 |
| Chicago, ovens | 7.50 |
| New England, del. | 10.50 |
| St. Louis, del. | 8.50 |
| Birmingham, ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ovens, Connell., basis | 5.50 |
| Portsmouth, O., ovens, Connell., basis | 5.50 |
| Buffalo, ovens | 8.00 to 8.50 |
| Detroit, ovens | 8.00 |
| Philadelphia, del. | 8.75 |

## Iron Ore

**LAKE SUPERIOR ORE**

| | |
|---|---|
| **Gross ton, 51½%, Lower Lake Ports** | |
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56-63%, contract | 10.00 |
| Copper-free low phos. 58-65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 10.00 |
| North African low phosphorus | 8.50 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 10.00 |
| Spanish, North African basic, 50 to 60% | 8.50 to 9.00 |
| Newfoundland fdy., 55% | 8.50 |
| Tungsten, spot and future short ton unit, duty paid | $11.25 to $11.50 |
| Chrome ore, 48% net ton c.i.f. | $21.50 to 22.00 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% (nom.) | 26 to 28 cents |
| South African, 52% | 26 to 28 cents |
| South African, 49-51% | 25 to 26 cents |
| South African, 44-47% | 24 cents |
| Indian, 48-50% | nom. |
| Brazilian, 46-48% (nom.) | 22 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $40.00 |
| Georgia, Alabama | 40.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 40.00 |
| Joliet, Ill., East Chicago, Ind. | 49.00 |
| Birmingham, Ala. | 50.00 |

**MAGNESITE BRICK**

**Per Net Ton**

| | |
|---|---|
| 9 x 4½ x 2½ | $65.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore bases | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**PRICES PER GROSS TON**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $29.00 |
| Pittsburgh, bessemer | 29.00 |
| Youngstown | 29.00 |
| Cleveland | 29.00 |
| Philadelphia | 34.30 |
| Chicago | 30.00 |
| Forging, Chicago | 35.00 to 36.00 |
| Forging, Pittsburgh | 35.00 to 36.00 |
| Forging, Philadelphia | 39.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | 29.00 |
| Youngstown | 29.00 |
| Cleveland | 29.00 |
| Chicago | 30.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | 29.00 |
| Youngstown | 29.00 |
| Cleveland | 29.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | 35.00 |
| Chicago | 36.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.60c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

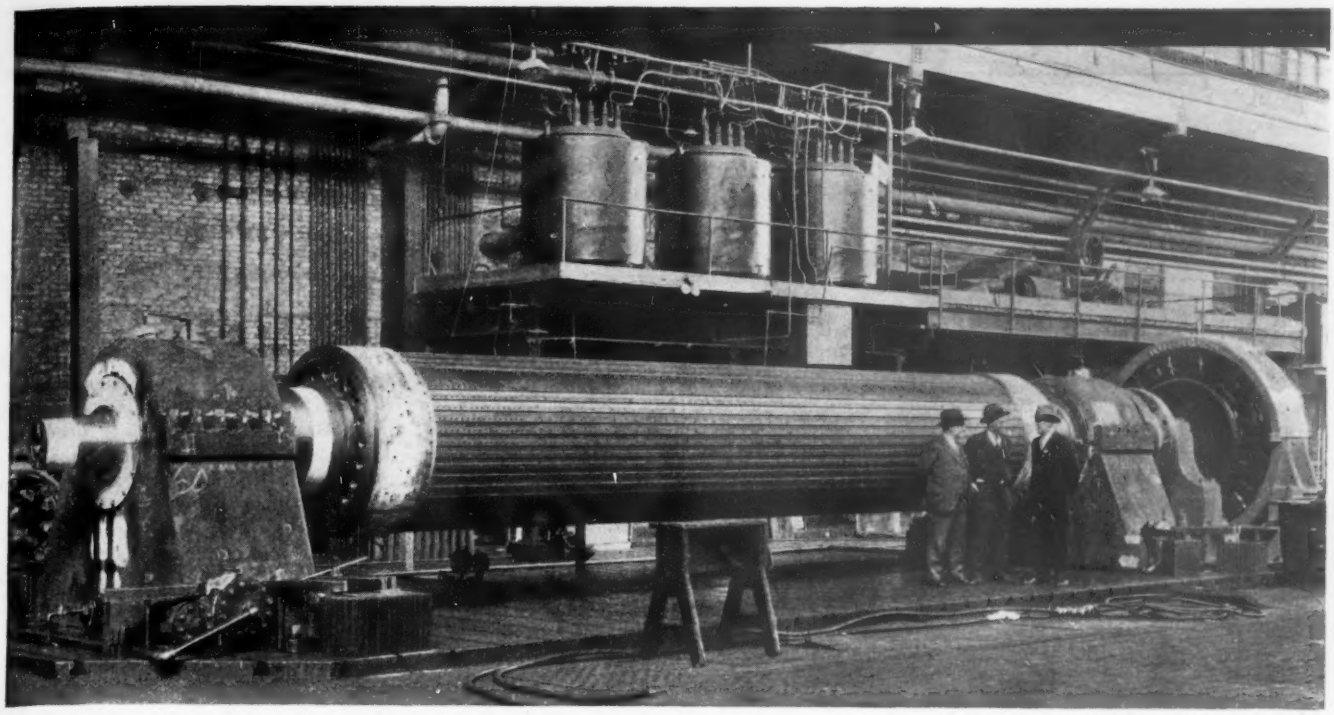
| | |
|---|---|
| •Ferromanganese, 78-82%, tidewater, duty paid | $85.00 |
| •Ferromanganese, del. Pittsburgh | 89.79 |
| Spiegeleisen, 19-20%, domestic fur. spot† | 30.00 |
| Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| Do, less carload | 88.50 |
| Do, 75 per cent | 130.00 to 150.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.00 to 1.10 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 150.00 |
| Do, one-ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |
| Ferromolybdenum, stand. 50-60 per cent, per lb. | $1.00 |
| Cal. Molybdate, lb. cont. | .85 |

†Carloads. Differentials apply to quant.
•To users of carloads to 500 tons annually. Differentials to large users.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $13.00 |
| Washed gravel, import duty paid east. tide, gross ton | 18.50 to 19.00 |



# THE PUBLIC SERVICE COMPANY OF NORTHERN ILLINOIS INSTALLED THIS 115,000 KW TURBINE WITH THE WORLD'S LARGEST SHAFT FORGING

MADE BY

# MIDVALE

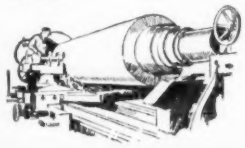
THE Allis Chalmers Manufacturing Company has completed an electric generator that will light 70,000 homes. It was made for the Waukegan plant of the Public Service Company of Northern Illinois—and required a 134-ton forging from an ingot that weighed 234 tons. The photograph shows the generator rotor, completed, being tested prior to installation.

Abnormal requirements in size, in strength, in reliability are frequent in the orders which come to Midvale. For modern industry must constantly adapt itself to meet more and more difficult requirements—more severe testing conditions.

The Midvale Company has always looked ahead to the needs of the future—for this reason it is able to satisfy the needs of today. Perhaps it can help you solve some problem in steel that puzzles you. Midvale's help is available to you at its nearest office—Philadelphia, New York, Pittsburgh, Washington, Cleveland, Chicago, San Francisco.

## TOOL STEEL

Midvale does not follow the "tonnage" method of tool steel production. Midvale charges with cold metal. Lets the ingots cool, to permit inspection for faults. Carefully chips out any cracks. Reheats ingots and reduces to billet size. Sand-blasts. Again inspects and chips when necessary. Reheats and rolls to finished size. This is the only method by which tool steel of Midvale quality can be produced.



# Pig Iron

**Shipments to Automotive Industry Picking Up—Furnace Stocks Large—New Sales Light**

PIG IRON PRICES, PAGE 70

**Pittsburgh**—Sales of pig iron generally are limited to car lots, with the August volume considerably under that of the comparable period in July. Few inquiries are pending, but sellers anticipate a slight improvement in demand after the close of the month. Foundry operations remain at low ebb. A sale recently reported as having been made to a Jeanette, Pa., consumer at below the usual market is said to have been for off-grade material. Foundry, malleable, basic and bessemer iron hold at $17, base, valley.

**New York**—Pig iron sales in the week aggregated 3000 tons, slightly less than a week ago. Fresh inquiry totals 2000 tons, comprised of relatively small lots. Prices are easy, but unchanged.

Buying includes 300 tons of high silicon and No. 2 plain iron for the Schenectady, N. Y., plant of the American Locomotive Co. Worthington Pump & Machinery Corp., Harrison, N. J., is inquiring for 200 tons of No. 2 plain silicon iron of special phosphorus content.

**Philadelphia**—The market for pig iron is dull, with prices developing an easier tone. No. 2 plain now is $16.76 to $17.26, delivered, Philadelphia; No. 2X is $17.26 to $17.76; No. 1X, $17.76 to $18.26.

**Buffalo**—A district furnace was banked in the week. This reduces the number of active units to four. Deliveries during the first half of August were equal to the average for July. Buffalo furnaces report two inquiries of 300 tons each. Eastern district prices continue highly competitive.

**Youngstown, O.**—Small lots of No. 2 foundry and malleable pig iron continue to be purchased, in most instances for immediate shipment. Some low phosphorus iron also is moving from valley producers to steel foundries. Quotations on No. 2 foundry, malleable, bessemer and basic continue at $17, valley furnace, while standard copper-free, low phosphorus brings $27.

**Cleveland**—Pig iron shipments are beginning to show a rising tendency, anticipated for September requirements. This is particularly noticeable in specifications from the automotive industry. New business reflects little change in consumers' requirements this month, and orders continue small. Furnace interests with headquarters in Cleveland booked approximately 6000 tons in the past week, 5000 tons less than in the preceding week. Pig iron stocks in the hands of merchant furnaces in Cleveland are estimated at 150,000 tons, nearly twice normal. In some instances recently it is reported less than $16, base, furnace, has been done for outside shipment. The market in Cleveland is too slow at present to test the $17 price for local delivery.

**Cincinnati**—Demand for pig iron, chiefly northern, showed an upward trend in the week with sales of more than 2000 tons, including 500 tons to an Ohio melter. Competition of northern furnaces remains keen. Inquiries are light.

**Chicago**—Prospects for larger demand for pig iron next month have improved. Several manufacturers of farm equipment may resume part-time operations. Automotive shipments still are slow. About 200 tons of foundry iron is on inquiry from the Northwest. Demand for southern iron is quiet and the price is unchanged at $11, base, Alabama furnace. Northern iron is $17.50, except for occasional sales from docks.

A cargo of about 1500 tons of pig iron has arrived here from Cleveland, to be offered from the East Chicago docks. Some of it has already been sold.

**St. Louis**—Foundry operations in this district average 20 to 25 per cent and little interest is shown in future pig iron requirements. Manufacturers of stoves and furnaces report their shipments are the smallest for this period in more than 20 years.

**Birmingham, Ala.** — Production, sales and shipments are unchanged from the rate prevailing for several weeks. The market for delivery in the Birmingham district holds at $12, base, while for shipment to outside competitive points it usually is $11.

**Toronto, Ont.**—Pig iron orders improved slightly in the past week, amounting to about 500 tons. Melters are operating with small stocks. The melt is holding at around 50 per cent.

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The average freight train in the United States in 1920 carried 708 tons of freight; in 1930 this was increased to 785 tons, 11 per cent growth.

## Ferroalloys Market Dull; Spot Buying in Abeyance

Ferroalloy Prices, Page 70

**New York**—Ferromanganese is moving sluggishly, the market nominal at $85, duty paid, for material in car lots. Spot buying is practically nil. Domestic spiegeleisen also is quiet and unchanged, sellers quoting $30, furnace, on carlots.

Business in special ferroalloys is spotty. Consumers appear to be satisfied with current prices, so that the only question is the requirements of the users.

**Chicago**—Shipments of ferroalloys are about the same as in July. A mixed cargo of spiegeleisen and low phosphorus pig iron has arrived from Canada.

## Bolts, Nuts Specified for Stock; Consumption Is Low

Bolts, Nuts, Rivets Prices, Page 59

**Pittsburgh** — Specifications for bolts, nuts and rivets continue around the quiet rate of the past six weeks. Stocks of practically all consumers, particularly the railroads, are at an extremely low level but buying is only for prompt needs. Large rivet prices are steady at 2.75c, Pittsburgh, but the situation in bolts and nuts remains spotty with an extra 10 points granted in some sections in addition to the usual market of 73 and 10 off.

**New York**—Bolts and nuts are fairly steady at 70 and 10 off to consumers, although there is a tendency to shade on tonnage to jobbers. Rivets are unchanged at 2.75c, Pittsburgh. Business is sluggish.

**Cleveland**—Specifications for bolts and nuts are slightly better than in July, in spite of a falling off in automotive orders. Plants are approximately 35 per cent engaged. Following a weakness in several quarters several weeks ago, 73 and 10 off list is apparently firm.

**Chicago** — Producer operations barely reach 30 per cent. Several implement sources have bought some bolts, nuts and rivets for stock, but these give no indication as to when they expect to resume operations. Partial resumption is expected for at least one of the works next month. Some weakness is shown in rivet prices. Bolts and nuts are quoted 73 and 10 off.

# Scrap

**Only Small Sales Prevent Stalemate—Steel Grades Down Slightly at Chicago**

**Chicago** — Several steel scrap prices have not weakened materially despite a further sale of about 2000 tons of heavy melting at $8.50. The melting steel price range thus is down 50 cents, to a range of $8 to $8.50, effective as of Aug. 10, and a few open-hearth grades have weakened sympathetically. Although industrial scrap has been accumulating in more volume, quotations have failed to yield appreciably from the nominally steady level of the past 30 days. It is expected that a second cargo of about 4000 tons of cast borings will be ready for shipment by lake boat to the Buffalo district within the next two weeks.

**Philadelphia**—Consumers of No. 1 forge scrap have reduced their bids. Sellers have gone half way and while

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 7.50 to 8.50 |
| Boston, dealers | 4.50 to 5.00 |
| Buffalo, No. 1 | 9.00 to 9.50 |
| Buffalo, No. 2 | 7.50 to 8.00 |
| Chicago | 8.00 to 8.50 |
| Cinn., deal. | 7.50 to 8.00 |
| Cleve., No. 1 | 8.50 to 9.00 |
| Cleve., No. 2 | 8.00 to 8.25 |
| Det., No. 1 deal. | 7.25 to 7.75 |
| **Det., No. 2 deal.** | **6.00 to 6.50** |
| E. Pa. del. mill | 8.00 to 9.50 |
| N. Y. deal. R. R. | 5.00 to 6.50 |
| **N. Y. deal. No. 2** | **3.50 to 4.00** |
| **N. Y. deal. yd.** | **4.00 to 4.50** |
| Pitts., No. 1 | 10.50 to 11.00 |
| St. L. No. 1 sel. | 8.00 to 8.20 |
| Federal, Ill. | 7.75 to 8.25 |
| **Granite City, Ill.** | **7.00 to 7.50** |
| Valleys, No. 1 | 10.50 to 11.00 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 7.50 to 8.00 |
| Chicago | 7.00 to 7.50 |
| Cleveland | 8.00 to 8.50 |
| Detroit, dealers | 6.75 to 7.25 |
| **E. Pa. new mat.** | **8.00 to 9.00** |
| Pittsburgh | 10.25 to 10.75 |
| Valleys | 10.00 to 10.50 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 5.50 to 6.00 |
| Cinci., deal. | 6.75 to 7.25 |
| Cleveland | 6.50 to 7.00 |
| Eastern Pa. | 6.50 to 7.00 |
| Pittsburgh | 8.50 to 9.00 |
| St. Louis | 5.00 to 5.50 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 4.00 to 4.50 |
| Cincinnati | 4.00 to 4.50 |
| Detroit, dealers | 4.00 to 4.50 |
| St. Louis | 5.00 to 5.50 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 10.50 to 11.00 |
| Boston, dealers | 3.00 to 4.50 |
| Buffalo | 12.00 to 12.50 |
| Chicago (3 ft.) | 10.00 to 10.50 |
| Chicago (2 ft.) | 10.75 to 11.25 |
| **Cinci., deal.** | **13.00 to 13.50** |
| Detroit, deal. | 11.00 to 11.50 |
| Pitts. (open-hearth, 3 ft. and less) | 13.00 to 13.50 |
| St. Louis | 12.00 to 12.50 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 7.00 to 7.50 |
| Boston, con. | 5.00 to 5.50 |
| Buffalo | 7.75 to 8.00 |
| Chicago, net | 7.00 to 7.50 |
| **Cinci., deal. net** | **4.50 to 5.00** |
| Det., net deal. | 4.00 to 4.50 |
| Eastern Pa. | 7.50 to 8.00 |
| N. Y., deal. mill | 4.50 to 4.75 |
| St. Louis | 7.00 to 7.50 |

### COUPLERS, SPRINGS

| | |
|---|---|
| Buffalo | 11.25 to 11.75 |
| Chicago | 9.75 to 10.25 |
| **Eastern Pa.** | **13.00** |
| Pittsburgh | 12.75 to 13.25 |
| St. Louis | 8.50 to 9.00 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 9.25 to 9.75 |
| St. Louis | 8.00 to 8.50 |

### LOW PHOSPHORUS

| | |
|---|---|
| **Buffalo, billets and bloom crops** | **12.75 to 13.25** |
| **Cleveland bil. and bloom crops** | **12.00 to 12.50** |
| **Eastern Pa.** | **13.50 to 14.00** |
| **Pittsburgh billet bloom crops** | **14.50 to 15.00** |
| **Pitts. sheet bar crops** | **13.50 to 14.00** |

### FROGS, SWITCHES

| | |
|---|---|
| **Chicago** | **8.50 to 9.00** |
| St. Louis | 8.75 to 9.25 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 8.00 to 8.50 |
| Cleveland | 6.50 to 7.00 |
| St. Louis | 7.75 to 8.25 |

### RAILROAD WROUGHT

| | |
|---|---|
| **Birmingham** | **8.00 to 8.50** |
| Boston, dealers | 8.00 to 8.50 |
| Buffalo, No. 1 | 7.00 to 7.50 |
| Buffalo, No. 2 | 9.00 to 9.50 |
| **Chicago, No. 1** | **8.25 to 8.70** |
| Chicago, No. 2 | 8.00 to 8.50 |
| Cinci., No. 2 | 7.50 to 8.00 |
| Eastern Pa. | 9.50 to 10.00 |
| **N. Y., No. 1, deal.** | **9.00 to 9.50** |
| Pitts., No. 2 | 10.50 to 11.00 |
| St. Louis, No. 1 | 5.00 to 5.50 |
| St. Louis, No. 2 | 7.75 to 8.25 |

### SPECIFICATION PIPE

| | |
|---|---|
| **Boston** | **5.00 to 5.25** |
| Eastern Pa. | 10.00 to 10.50 |
| N. Y., deal. | 5.50 to 6.00 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 7.50 to 8.00 |
| Chicago, No. 1 | 6.75 to 7.25 |
| Cinn., No. 1 dl. | 6.00 to 6.50 |
| Cinn., No. 2 | 3.50 to 4.00 |
| Cleve., No. 2 | 6.25 to 6.75 |
| Det., No. 1 new deal. | 5.50 to 6.00 |
| St. L., No. 1 | 6.00 to 6.50 |
| Val. new No. 1 | 9.50 to 10.00 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 3.50 to 4.50 |
| Boston, dealers | 1.50 to 1.75 |
| Buffalo | 4.75 to 5.00 |
| Chicago | 3.75 to 4.25 |
| Cinn., deal. | 3.75 to 4.25 |
| Cleveland | 5.00 to 5.50 |
| Detroit | 4.00 to 4.50 |
| Eastern Pa. | 5.00 to 6.00 |
| N. Y., deal. | 2.00 to 2.50 |
| Pittsburgh | 7.25 to 7.75 |
| St. Louis | 3.00 to 3.50 |
| Valleys | 8.00 to 8.25 |

### BORINGS AND TURNINGS
**For Blast Furnace Use**

| | |
|---|---|
| Boston | 1.50 to 1.75 |
| Buffalo | 5.75 to 6.25 |
| Cinn., deal. | 4.50 to 5.00 |
| Cleveland | 6.50 to 7.00 |
| Detroit, deal. | 4.75 to 5.25 |
| Eastern Pa. | 5.50 |
| N. Y., deal. | 2.00 to 2.50 |
| Pittsburgh | 7.50 to 8.00 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.50 to 13.00 |
| Birming., plain | 3.50 to 4.50 |
| Boston, chem. | 7.00 to 7.25 |
| Boston, deal. | 1.50 to 1.75 |
| Buffalo | 5.75 to 6.25 |
| Chicago | 3.75 to 4.25 |
| Cinn., deal. | 3.75 to 4.25 |
| Cleveland | 6.50 to 7.00 |
| Detroit, deal. | 4.75 to 5.25 |
| **Eastern Pa.** | **5.00 to 6.00** |
| E. Pa., chem. | 10.00 to 10.50 |
| N. Y., deal. | 2.00 to 2.50 |
| Pittsburgh | 7.50 to 8.00 |
| St. Louis | 5.50 to 6.00 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal. | 6.00 to 6.50 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 6.50 to 7.00 |
| Chicago, net | 5.75 to 6.25 |
| **Cincinnati** | **5.50 to 6.00** |
| Eastern Pa. | 7.50 to 8.00 |
| N. Y., deal. | 5.00 to 5.50 |
| St. Louis | 6.00 to 6.50 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal. | 5.00 to 5.25 |
| Buffalo | 7.50 to 8.00 |
| Cleve. ov. 10 in. | 7.00 to 7.50 |
| Detroit | 6.00 to 6.50 |

### FORGE SCRAP

| | |
|---|---|
| Boston, del. | 5.00 to 5.25 |
| Chicago | 11.50 to 12.00 |
| Eastern Pa., del. | 8.00 to 9.50 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 10.50 to 11.00 |
| St. Louis | 8.25 to 8.75 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 7.50 to 8.00 |
| Chi., steelworks | 7.50 to 8.00 |
| Cleveland | 6.75 to 7.00 |
| Eastern Pa., del. | 7.50 to 8.50 |
| Pittsburgh | 9.50 to 10.00 |
| St. Louis | 6.50 to 7.00 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 11.50 to 12.00 |
| Boston, ship. pt. | 11.00 to 12.00 |
| Buffalo | 14.50 to 15.00 |
| Chicago | 14.00 to 14.55 |
| Eastern Pa. | 18.50 to 19.50 |
| St. Louis | 11.50 to 12.00 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 10.00 to 10.50 |
| Chicago | 9.55 to 10.10 |
| N Y., deal. | 12.00 to 13.00 |
| St. Louis | 9.00 to 9.50 |
| E. Penna. | 18.00 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 8.00 to 9.00 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 10.50 to 11.00 |
| Buffalo, steel | 10.75 to 11.25 |
| Chicago, iron | 10.00 to 10.50 |
| Chi. rolled steel | 10.00 to 10.50 |
| Cincinnati, iron | 10.50 to 11.00 |
| E. Pa. steel | 10.50 to 11.00 |
| E. Pa. iron | 12.50 to 13.00 |
| Pitts. iron | 11.00 to 11.50 |
| Pitts., steel | 12.75 to 13.25 |
| St. Louis, iron | 7.25 to 7.75 |
| St. Louis, steel | 9.25 to 9.75 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birmingham | 9.00 to 10.00 |
| Buffalo (mach.) | 9.00 to 10.00 |
| Boston, textile | 10.00 to 10.50 |
| Chicago, mach. | 9.80 to 10.35 |
| Chi., railroad | 8.70 to 9.25 |
| Chicago, agri. | 8.40 to 8.95 |
| Cinn., mach. cup., gross | 12.25 to 12.75 |
| Cleve. cupola | 10.00 to 10.50 |
| Det., net deal. | 8.00 to 8.50 |
| **E. Pa. cupola** | **12.50 to 13.00** |
| N. Y. cup. deal. | 7.00 to 7.50 |
| N. Y., del. local foundries | 12.00 |
| Pitts., cupola | 10.00 to 10.50 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 6.00 to 7.50 |
| St. L. No. 1 ma. | 8.50 to 9.00 |
| St. L. No. 1 | 7.50 to 8.00 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. mach. cast. | 11.50 to 12.50 |
| **Buffalo, break** | **6.50 to 7.00** |
| Cleve., break | 6.00 to 6.50 |
| **Detroit, auto, net deal.** | **10.50 to 11.00** |
| Det., break., dl. | 5.50 to 6.00 |
| Eastern Pa. | 10.00 to 10.50 |
| N. Y. No. 1 dl. | 7.50 to 8.00 |
| N. Y., break. dl. | 7.00 to 7.50 |
| Pittsburgh | 8.00 to 8.50 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 13.00 to 13.50 |
| Buffalo | 10.00 to 10.50 |
| Chicago, agri. | 7.50 to 8.00 |
| Chicago, R. R. | 8.50 to 9.00 |
| Cinci., R. R. Del. | 11.00 to 11.50 |
| Cinci., agri. del. | 10.00 to 10.50 |
| Cleveland, rail | 10.00 to 10.50 |
| Det. auto deal. | 10.50 to 11.00 |
| St Louis, rail | 7.50 to 8.00 |

### RAILS FOR ROLLING
**5 feet and over**

| | |
|---|---|
| Birmingham | 10.25 to 11.00 |
| Boston | 7.50 to 8.00 |
| Buffalo | 10.00 to 10.50 |
| Chicago | 10.50 to 11.00 |
| Eastern Pa. | 11.50 to 12.00 |
| New York | 7.00 to 7.50 |
| St. Louis | 10.50 to 11.00 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 11.50 to 12.00 |
| St. L., No. 1 | 9.50 to 10.00 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 10.75 to 11.25 |
| Buffalo | 12.50 to 13.00 |
| Eastern Pa. | 13.00 to 14.00 |
| Pittsburgh | 13.50 to 14.00 |

# STEEL SHOW ISSUE—SEPTEMBER 10, 1931

## Information

### General

The National Metal Congress (American Society for Steel Treating Exposition) will be held at the Commonwealth Pier, Boston, September 21-25. The following technical societies will participate:

American Society for Steel Treating
American Welding Society
Iron & Steel Division, A. S. M. E.
Machine Shop Section, A. S. M. E.
Iron & Steel Division, A. I. M. & M. E.
Institute of Metal Division, A. I. M. & M. E.

Naturally STEEL will play a prominent part in co-operating to make this Thirteenth Annual Metal Congress a success. The issue of September 10 will carry the complete advance details of exposition and convention. This issue will be in the hands of readers 10 days before the convention opens—ample time to make plans.

This issue will bring the convention and exposition to those who cannot attend.

### Publication

A feature of the September 10 issue of STEEL will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

This interest value is not confined to the readers of STEEL who attend the Boston Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon STEEL to bring the Exposition to them.

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#### COLOR

Two colors will be used—red and black—printed on India tint coated stock.

#### RATE

Including color and insert position—$150 a page for regular advertisers—$175 per page one time.

#### CLOSING DATES

Final forms close Tuesday, September 1. Reservation and copy requiring composition should be in Cleveland not later than Monday, August 24.

STEEL

*For forty-eight years*—IRON TRADE REVIEW

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little business has resulted, the market nominally is lower. Heavy axle turnings also are off nominally. Bethlehem Steel Co. closed on 450 tons of heavy melting steel for Bethlehem, Pa., and scattered lots for Sparrows Point, Md., paying $8, delivered both points. General buying is dull.

**Boston**—Scrap prices have been maintained without change, there being no sales. Sellers and buyers alike are out of the market.

**Buffalo**—Scrap deliveries continue at low ebb. Dealers are informed little additional tonnage can be acquired for movement by barge canal to Buffalo, and see in this a hopeful sign. The market is lifeless, dealers not selling at prevailing nominal prices. Melt is lower than at any time this year.

**Pittsburgh**—Scrap remains quiet. One small sale of heavy melting is reported at $10.50. Anything like a buying movement, however, will develop higher prices. Shipments to consumers continue fairly steady. A few small sales of miscellaneous grades substantiate current quotations which largely are nominal.

**Detroit**—Due to a hold-up of shipments at the local steelworks, open-hearth grades of scrap are somewhat easier. On the whole, however, the price situation is no easier; in fact, some interests look for higher prices by next month and sentiment seems somewhat better. Heavy melting steel is now quotable at $7.25 to $7.75, and compressed sheets at $6.75 to $7.25.

**Cincinnati**—Better prices and fairly active bidding on recent railroad scrap lists are reported here. Otherwise the market is dormant with slight test of present nominal quotations. New business comprises small lots.

**Cleveland**—Iron and steel scrap demand continues to lag. With little trading, however, prices are holding at unchanged levels. Some dealers anticipate early resumption of steelworks buying in preparation for the expected fall upturn in steelmaking activity.

**St. Louis**—Purchasing of scrap has receded to the lowest point since the start of the depression. Specifications disappoint. Industries request deferred deliveries. Small, scattered lots of steel specialties move at bargain prices. Yard stocks are heavy, being augmented by railroad deliveries of scrap at a time when consumer customers will not accept deliveries. Recent carrier offerings include: Louisville & Nashville, 5600 tons; Southern Pacific, 7180 tons; and Chicago Great Western, 95 carloads.

**Toronto, Ont.**—Large orders for iron and steel scrap are absent but small orders are steady giving the market a brighter tone. Machinery cast moves fairly well. Dealers report a better call for malleable and stove plate. Mills make no change in buying policies, purchasing special grades from dealers and picking up large tonnages from railroads. Dealers are out of the market. Prices are unchanged.

**Birmingham, Ala.**—At $7.50 to $8.50, delivered, heavy melting steel scrap is moving actively. This is taken to forecast early resumption of works. Railroads have disposed of considerable material and dealers have built up reserve stocks.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axle | $11.00 |
| Steel axles | 10.00 |
| Car wheels | 8.00 |
| Stove plate | 8.00 |
| Wrought pipe | 2.00 |
| Turnings | 2.00 |
| Heavy melting steel | 6.00 |

TORONTO

| | |
|---|---|
| Steel axles | 7.00 |
| Iron axles | 7.00 |
| Heavy melting steel | 7.00 |
| Turnings | 2.00 |
| No. 1 mach. cast (net) | 9.00 |
| Malleable (net) | 7.00 |

## Shows Dismissal Wage Plans May Prove Costly

Dismissal wages are compulsory in foreign countries, but in the United States they are voluntary. Only 2 per cent of 2618 companies whose wage systems were analyzed recently by the National Industrial Conference board, New York, were found to have formal dismissal wage plans. In addition, 30 companies are making a practice of paying dismissal allowances in special cases.

A case is cited where concentration of departments made it necessary for a large corporation to close two plants in New England. Under a plan in effect the corporation paid "hundreds of thousands of dollars" in dismissal wages, ranging from $104 to $2088 to individuals. These plans generally are based on length of service and compensation. The main drawback to adopting a definite policy is the uncertainty of future expense. State legislatures are reported showing a growing inclination to take an active part in dealing with such matters.

In 1920 the average freight train in the United States contained 37 cars; in 1930 it contained 49 cars, an increase of 32 per cent.

# Coke

**Low Rate of Furnace and Foundry Operations Restrict Shipments—Prices Fairly Steady**

COKE PRICES, PAGE 70

**Pittsburgh**—Prices of beehive coke are unsettled but the little business that is going is being done generally at the prevailing quotations. The low rate of furnace and foundry operations continues to restrict demand.

**New York**—Demand for metallurgical coke continues to drag, with beehive furnace coke unchanged at $2 to $2.25, Connellsville, and standard grades of foundry coke at $3 to $3.25. Premium brands of beehive foundry coke are $4.50, Latrobe, equivalent to $4.70, Connellsville. By-product coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

**Boston**—Unusually warm weather in the New England states has put a further check on coke consumption. New orders are limited to small lots, and on these prices are steady.

**Cincinnati**—Slightly better specifications this month for by-product foundry coke give hope for a heavier melt. Prices are unchanged. Domestic grades are seasonally dull.

**St. Louis**—Specifications for metallurgical coke continue in small volume, reflecting the low rate of operations at foundries and mills. The August rate of shipments is about equal with that of July, the lowest this year. Some inquiry from western and southwestern melters is noted.

**Birmingham, Ala.**—With a third of the coke ovens in this district idle production still exceeds shipments. The movement to outside districts is light. Prices are unchanged.

# Pacific Coast

**Sentiment Slightly Improved in Pacific Northwest—Coast Markets Generally in Buyers' Hands and Prices Soften — Plate Awards Still Top 1930—Navy Hangar Largest Shape Job**

**Seattle**—Sentiment in the iron and steel markets of the Pacific Northwest is more optimistic after an exceptionally dull month. There is an improved outlook for shapes, plates and pipe, with prospective tonnages of fair proportions, but demand for reinforcing material is small.

Awards this week totaled approximately 800 tons, but projects pending include 6500 tons of structurals and 3000 tons of cast iron pipe.

### Pig Iron and Coke

Foundry operations have not increased and many plants are practically idle, this having been the worst period in 20 years. No marked improvement is anticipated until next spring as there is little promise of fall work. There is limited buying of pig iron and coke. The latter, despite conditions, has held its own, still being quoted at $13 for the best British grades. Pig iron is weaker, No. 1 Columbia being sold at $21 and No. 2 at $20.50.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22.00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

### Bars, Plates and Shapes

Both merchant and reinforcing bars are moving slowly and only in small tonnages. No business of proportions has developed. Lettings are almost invariably in less than 100 ton lots.

Two plate projects, involving 465 tons of steel, were awarded to local plants this week. Birchfield Boiler Works, Tacoma, will fabricate a section of 52-inch steel pipe weighing 340 tons, for a Tacoma replacement job. The major portion of this improvement was awarded to concrete pipe manufacturers at Tacoma at a higher price. Seattle Boiler Works will build a 35,000-barrrel storage tank for the new Seattle terminals of the Hancock Oil Co, 125 tons. Identical bids were submitted by the Columbia, Republic, Wheeling and American Rolling Mill companies for furnishing 80 tons of sheets for Idaho automobile licenses. The award is pending. A unit bid of $3.75 per sheet was made for 26 gage, 28⅞ x 95¼-inch and an alternate of $3.95 for a sheet 13 9/16 x 90⅞. State of Washington will be in the market in October for about 300 tons for 1932 automobile plates.

The only structural award of the week, 70 tons for a bridge in Grays Harbor county, went to Isaacson Iron Works, Seattle. Projects pending include: 4000 tons for Seattle federal building, general contract awarded, subcontracts to be announced about Sept. 1; 500 tons for Ashcroft bridge, bids to be opened at Victoria, B. C., Aug. 24; 520 tons for two steel spans over Naches and Yakima rivers, Wash., bids Aug. 18; 1200 tons for University bridge approaches, Seattle, bids probably within 60 days.

### Finished Materials

While the wholesale jobbing business is slightly better than in July, it is entirely a buyers' market as prices are open and competition is unusually keen. No special item is in demand but dealers believe the worst is over and an improved fall volume is expected. Prices are low, but this has not stimulated buying.

### Pipe

The largest pipe project pending involves 1650 tons of 6, 8 and 12-inch cast iron, and accessories, for Yakima, Wash., bids Aug. 17. The same day Elma, Wash., will open bids for 400 tons, and improvement jobs in Seattle will require probably 500 tons of centrifugal within a short time. No awards were made this week, Ferndale, Wash., having supplied present requirements by purchasing 1450 feet of 10-inch centrifugal from Bellingham.

### Old Materials

The market continues weak and demand is slow as stocks are large. Pacific Coast Steel Corp. has resumed operations at two of the open-hearth furnaces in the Seattle mill and is again buying scrap. The maximum price for best grades of prepared scrap is $7.50, gross. Dealers are offering not to exceed $6, net, for good grades of cast iron scrap, cupola size.

## Plate and Bar Price Off

**San Francisco**—(*By Air Mail*)—Pacific Coast iron and steel sales and inquiries are few. The largest letting involved 425 tons of structural shapes for a bridge over Spanish creek in Plumas county, Calif., booked by the Pacific Coast Engineering Co. Bids have just been opened on 1000 tons of plates for a pipe line for Los Angeles. The price structure remains far from firm.

### Bars, Plates and Shapes

Awards of reinforcing steel bars aggregated 1320 tons and brought the total for the year to 44,319 tons, compared with 36,828 tons for the corresponding period in 1930. The Concrete Engineering Co., Los Angeles, secured 250 tons each for a veteran's hospital and a postoffice in Salt Lake City. Unnamed interests took 150 tons of bars for a swimming stadium at Exposition Park, Los Angeles, and 100 tons for a hospital wing in Fresno, Calif.

Bids have been opened on 246 tons for highway work in Tulare county, Calif., and on 100 tons for a memorial building in Guadalupe, Calif. Bids are being taken on 500 tons for a warehouse at Ninth and Alameda streets, Los Angeles. No change in out-of-stock reinforcing bar prices is noted, 2.60c, base, on carload lots applying in the San Francisco district and 2.50c, base, being firm in the Los Angeles district.

Demand for merchant bar material remains quiet, sales and inquiries involving unimportant lots for the most part. On this class of material 2.00c, c.i.f. is being quoted generally.

No plate awards of importance were reported. So far this year 109,962 tons have been booked, compared with 32,750 tons for the same period last year. Western Pipe & Steel Co. was low on 1000 tons of 60 and 72-inch welded steel pipe for Los Angeles. The Huber Co. was low bidder on 110 tons for a 250,000-gallon tank and tower for the Los Angeles General hospital. Further concessions in plate prices have been named and quotations now range between 1.85c and 1.95c, c.i.f.

Fabricators are greatly interested in the call for bids on 8000 tons for the new navy hangar at Sunnyvale, Calif., bids on which will be opened Sept. 23. Awards this week aggregated only 590 tons, bringing the total for the year to 69,164 tons, compared with 71,618 tons for the corresponding period in 1930.

Nickel alloyed with other metals _ steel, stainless steel, iron, brass, bronze, aluminum, etc. — insures dependable mechanical properties and one or more of the following improvements: (1) Greater impact and fatigue strength. (2) Greater resistance to heat, corrosion and wear. (3) Better workability. (4) Improved color and appearance.

# SOLID NICKEL SILVER

## ...another wear-resisting NICKEL ALLOY that *"looks better longer"*

●

SOLID NICKEL SILVER... once known as German silver... has been continually studied and improved. Metallurgists now know it as another technically controlled Nickel alloy which resists wear and retains its good looks from generation to generation.

When a beautiful, long-wearing material is needed for quality plumbing fixtures or hardware... where severe corrosive conditions will play havoc with less durable metals... highest architectural standards favor Solid Nickel Silver.

The relatively high Nickel content of Solid Nickel Silver renders this modern Nickel alloy highly resistant to the action of fumes and acids. Its bronze-like toughness gives long life to valve seats. Since it is solid metal, its silvery, clean-looking appearance will stand repeated cleaning and last for years. It fulfills the present-day demand for a lustrous white metal that will keep its lustre.

Interesting literature describing the properties and many uses of Solid Nickel Silver will be mailed upon receipt of the coupon.

**THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.**

*Miners, refiners and rollers of Nickel... Sole producers of Monel Metal*

**Nickel ALLOYS PERFORM BETTER LONGER**

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

Please send me your bulletin on Solid Nickel Silver

Name .....

Address .....

Position .....

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 Ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

**BUTT WELD**

| Steel In. | Blk. | Gal. | Iron In. | Blk. | Gal. |
|---|---|---|---|---|---|
| ⅛ | 58 | 44½ | ⅛ | 23 | 5 |
| ¼ | 62 | 50½ | ¼ | 28 | 11 |
| 1—3 | 64 | 52½ | 1—1¼ | 31 | 15 |
| | | | 1½—2 | 35 | 18 |

**LAP WELD**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½—6 | 61 | 49½ | 2½—3½ | 28 | 13 |
| 7—8 | 58 | 45½ | 4—6 | 30 | 17 |
| 9—10 | 56 | 43½ | 7—8 | 29 | 16 |
| 11—12 | 55 | 42½ | 9—12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ½ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¾ | 60 | 49½ | ½ | 23 | 7 |
| 1—1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2—3 | 63 | 52½ | 1—2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½—4 | 59 | 48½ | 2½—4 | 34 | 20 |
| 4½—6 | 58 | 47½ | 4½—6 | 33 | 19 |
| 7—8 | 54 | 41½ | 7—8 | 31 | 17 |
| 9—10 | 47 | 34½ | 9—12 | 21 | 8 |
| 11—12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

**Carload Discounts, f. o. b. Pittsburgh**

| Lap Welded Steel | | Charcoal Iron | |
|---|---|---|---|
| 2—2¼ | 38 | 1¾ | 8 |
| 2½—2¾ | 46 | 2—2¼ | 13 |
| 3 | 52 | 2½—2¾ | 16 |
| 3¼—3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¾—3½ | 18 |
| 4½—6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 inch | 61 | 3 | 46 |
| 1¼—1½ | 53 | 3¼—3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2—2¼ | 32 | 4½, 5, 6 | 40 |
| 2½—2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2—2¼ | 38 | 3¼—3½ | 54 |
| 2½—2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Tubing

**Cold drawn; f.o.b. mill discounts**

Random lengths over 5 ft. .....55%
Selected lengths, 1—18 ft. .....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 39.00 to 43.00
Six to 24-inch, Chicago..... 36.00 to 40.00
Six-inch and over, N. Y..... 32.50 to 34.50
Four-inch, New York ..... 38.50 to 39.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

# Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

**STEEL BARS**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.265c |
| Buffalo | 3.00c |
| Chattanooga | 3.00c |
| Chicago | 2.75c |
| Cincinnati | 3.00c |
| Cleveland | 2.75c |
| Detroit | 2.85c |
| Houston | 3.00c |
| Los Ang. | 3.40c |
| New York‡(d) | 3.10c |
| Philadelphia | 2.60c |
| Pittsburgh | 2.60c |
| Portland | 3.15c |
| San Frans. | 2.40c |
| Seattle | 3.00c |
| St. Louis | 3.00c |
| St. Paul | 3.00c |
| Tulsa | 3.50c |

**IRON BARS**

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga | 3.00c |
| Chicago | 2.75c |
| Cincinnati | 3.00c |
| Detroit | 2.85c |
| New York‡(d) | 3.10c |
| Philadelphia | 2.60c |
| St. Louis | 3.00c |
| Tulsa | 3.50c |

**REINFORC. BARS**

| | |
|---|---|
| Baltimore | 2.50c-3.31c |
| Boston | 3.265c |
| Buffalo | 2.95c |
| Chattanooga | 3.00c |
| Cincinnati | 3.00c |
| Cleveland | 2.10-2.25c |
| Detroit | 2.85c |
| Houston | 3.00c |
| Los Ang. cl. | 2.40c |
| Los Ang. lcl. | 2.70c |
| New York | 2.65c-3.10c |
| Phila. | 2.40c-3.00c |
| Pittsburgh | 2.60c |
| San Fran. cl. | 2.30c |
| San Fran. lcl. | 2.50c |
| Seattle | 3.00c |
| St. Louis | 3.15c |
| Tulsa | 3.50c |
| Young. | 2.30c-2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland | 2.95c |
| Detroit | 3.10c |
| Houston | 3.25c |
| Los Ang. | 3.40c |
| New York(d) | 3.10c |
| Philadelphia | 2.50c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 2.40c |
| Seattle | 3.00c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland, ¼-in. and thicker | 2.95c |
| Clev., 3/16-in. | 3.20c |
| Detroit | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston | 3.00c |
| Los Angeles | 3.40c |
| New York(d) | 3.30c |
| Philadelphia | 2.50c |
| Phila. floor | 5.10c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 2.40c |
| Seattle | 3.00c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.915c |
| Buffalo | 3.50c |
| Chattanooga | 3.50c |
| Chicago | 3.20c |
| Cincinnati | 3.30c |
| Cleveland | 3.00c |
| Detroit | 3.35c |
| Houston | 3.90c |
| Los Ang. | 3.95c |
| N. Y. (d) | 3.00c-3.40c |
| Portland | 4.00c |
| Phila.*† (e) | 3.05c |
| Pitts.** | 2.60c to 2.85c |
| San Fran. | 3.65c |
| Seattle | 3.75c |
| St. Louis | 3.45c |
| St. Paul | 3.40c |
| Tulsa | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt.*† | 3.50c |
| Boston | 4.70c |
| Buffalo | 3.70c |
| Chattanooga | 3.65c |
| Chicago | 3.55c |
| Cincinnati | 3.75c |
| Cleveland | 3.60c |
| Detroit | 3.50c |
| Los Ang. | 4.70c |
| New York | 3.50c-3.65c |
| Phila.*†(e) | 3.55c |
| Pitts.** | 3.40c |
| Portland | 4.50c |
| San Fran. | 4.15c |
| Seattle | 4.25c |
| St. Louis | 3.80c |
| St. Paul | 3.545c |
| Tulsa | 4.75c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† | 4.00c |
| Boston | 5.45c |
| Buffalo | 4.10c |
| Chattanooga | 3.95c |
| Chicago | 4.10c |
| Cincinnati | 4.25c |
| Cleveland | 4.00c |
| Detroit | 4.00c |
| Houston | 5.40c |
| Los. Ang. | 5.10c |
| New York | 4.00c-4.10c |
| Phila.*† (e) | 4.00c |
| Pitts.** | 4.00c |
| Portland | 5.00c |
| San Fran. | 4.65c |
| Seattle | 4.75c |
| St. Louis | 4.35c |
| St. Paul | 4.23c |
| Tulsa | 5.10c |

**BANDS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 4.015c-5.00c |
| Buffalo | 3.35c |
| Chattanooga | 3.20c |
| Chicago | 2.95c |
| Cincinnati | 3.20c |
| Cleveland | 3.00c |
| Det. 3/16-in. & lighter | 3.15c |
| Houston | 3.65c |
| Los Ang. | 4.30c |
| New York(d) | 3.40c |
| Philadelphia | 2.90c |
| Pittsburgh | 2.95c |
| Portland | 3.50c |
| San Fran. | 3.75c |
| Seattle | 3.50c |
| St. Paul | 3.75c |
| Tulsa | 3.70c |

**HOOPS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 5.50c-6.00c |
| Buffalo | 3.90c |
| Chicago | 3.50c |
| Cincinnati | 3.75c |
| Cleveland | 3.55c |
| Det. No. 14 & lighter | 3.65c |
| New York | 3.75c |
| Philadelphia | 3.15c |
| Pittsburgh | 3.60c |
| Seattle | 4.90c |
| St. Paul | 3.75c |

**COLD FIN. STEEL**

**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston | 3.50c |
| Buffalo | 3.15c |
| Chattanooga* | 3.75c |
| Chicago | 3.10c |
| Cincinnati | 3.50c |
| Cleveland | 3.10c |
| Detroit | 3.40c |
| Los Ang. (a) | 4.50c |
| New York | 3.40c |
| Philadelphia* | 3.40c |
| Pittsburgh | 3.10c |
| Portland (a) | 4.50c |
| San Fran.(a) | 4.25c |
| Seattle (a) | 4.50c |
| St. Paul (a) | 3.85c |
| St. Louis | 3.35c |
| Tulsa | 4.65c |

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

**COLD ROLL. STRIP**

| | |
|---|---|
| Boston 0.100 in., 500 lb. lots | 5.30c |
| Buffalo | 5.65c |
| Chicago (soft) (b) | 5.65c |
| Cincinnati | 5.80c |
| Clev. (b) | 5.55c |
| Detroit | 5.40c |
| Phila. (c) | 4.55c |
| New York | 4.55c |

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

## Mill Products

**Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.75c, Conn., for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 15.37½ |
| Copper, hot rolled | 17.62½ |
| Lead, full sheets (cut ½c more) | 8.25 |
| Zinc sheet (100-lb. base) | 9.00 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 20.25 |
| Seamless copper | 20.12½ |
| **Rods** | |
| Yellow brass (high, full turnings) | 13.62½ |
| Naval brass | 14.75 |
| **Anodes** | |
| Copper, untrimmed | 15.12½ |
| **Wire** | |
| Yellow brass (high) | 15.87½ |

## Old Metals

**Dealers' buying prices, cents lb.**

| | |
|---|---|
| **No. 1 Composition Red Brass** | |
| New York | 4.75 to 5.00 |
| Chicago | 4.25 to 4.75 |
| Cleveland | 4.50 to 5.00 |
| St. Louis | 4.00 |
| **Heavy Yellow Brass** | |
| New York | 3.00 to 3.25 |
| **Heavy Copper and Wire** | |
| New York | 5.50 to 5.75 |
| Boston | 5.00 to 5.25 |
| Chicago | 4.50 to 5.00 |
| Cleveland | 5.00 to 5.25 |
| St. Louis | 4.25 to 4.50 |
| **Composition Brass Borings** | |
| New York | 4.25 to 4.50 |
| **Yellow Brass Tubing** | |
| Cleveland | 3.50 to 3.50 |
| **Light Copper** | |
| New York | 4.50 to 4.75 |
| Chicago | 4.25 to 4.50 |
| Cleveland | 4.50 to 5.00 |
| St. Louis | 4.00 |
| **Light Brass** | |
| Boston | 2.00 to 2.25 |
| Chicago | 2.50 to 2.75 |
| Cleveland | 2.00 to 2.25 |
| St. Louis | 2.25 |
| **Zinc** | |
| New York | 1.25 to 1.50 |
| Cleveland | 1.25 to 1.50 |
| St. Louis | 1.50 |
| **Aluminum** | |
| Clippings, soft, Cleveland | 12.50 to 14.00 |
| Clippings, hard, Cleveland | 9.00 to 12.00 |
| Borings, Cleveland | 3.50 to 4.50 |
| Mixed cast, Cleveland | 4.00 to 5.00 |
| Mixed cast, Boston | 3.75 to 4.00 |
| Mixed cast, St. Louis | 4.00 |

## Secondary Metals

| | |
|---|---|
| Remelt alumnium No. 12 | 9.00 to 10.50 |
| Brass ingots, 85-5-5-5 | 7.62½ |

# Metals

**Prices Remain Steady Through Another Period of Dull Buying —Immediate Outlook Is Cloudy**

**New York** — Nonferrous metal prices have continued steady through another lifeless week. New business in nearly all metals has been extremely light, though consumers at times have bought moderate amounts of tin and a little lead. Only the indifference of sellers has prevented the weakening influence of dullness from assuming greater prominence. No immediate change in demand is expected, but it is thought that various manufacturers will take large tonnages in the autumn. Severe curtailment backs up the steadiness of all metals except copper.

**Copper**—Both domestic and export sales have been at a near standstill. Little metal has been available for early shipment at 7.50c, and consumers have wanted to do some buying for delivery a number of months ahead at this price, but custom smelters generally have asked 7.75c, Connecticut for futures. Producers continue to quote nominally 8.00c, or remain out of the market. Mill product prices are unchanged and sales quiet.

**Zinc**—Extremely light business for prompt shipment has been done at 3.82½c, East St. Louis, for prime western. In the past day or two a little metal has been available at 3.80c. The absence of much test through demand has made the status of the market indefinite in the past day or two. The ore market continues steady at $23 a ton.

**Tin** — Consumers have bought Straits tin for nearby autumn positions, mostly on the spot basis of 26.00c and slightly higher. Futures range ⅛-cent a month above spot. This buying, which is more or less seasonal, is one reason for the firmer prices of tin lately. However, it was also remarked in the trade that the market bears some of the ear marks of professional support.

**Lead**—Slightly increased interest has been shown by consumers. Prices here have been unchanged, but there has been weakness in London.

**Aluminum**—New business is quiet and prices unchanged. Consular reports state that the European cartel will come to an end at the end of this year. Importers here say they have no knowledge of such developments.

## Sulphate Inquiry Improves; By-Product Trading Light

**New York**—Although not being transformed into much actual business, inquiry for sulphate of ammonia against annual requirements is slightly better. Unsettlement abroad continues to exert a deterring influence. Meanwhile, the spot market is unchanged at $1.375 per 100 pounds, Atlantic seaboard. Naphthalene and light oil distillate prices are unchanged, with trading light. Production of certain distillates, notably toluol, has been scaled down considerably, although no shortage appears in any line.

## Coke By-Products

**Per Gallon, Producers' Plants, Tank Lots**

| | Spot |
|---|---|
| Pure benzol | $0.18 |
| 90 per cent benzol | 0.18 |
| Toluol | 0.27 |
| Solvent naphtha | 0.24 |
| Commercial xylol | 0.24 |
| **Per Pound at Producers' Plants in 250-Pound Drums** | |
| Phenol | 0.16 to 0.17 |
| **Per Pound at Producers' Plants** | |
| Naphthalene flakes | 3.75 to 4.75 |
| Naphthalene balls | 4.75 to 5.75 |
| **Per 100 Pounds Atlantic Seaboard** | |
| Sulphate of ammonia | $1.375 |

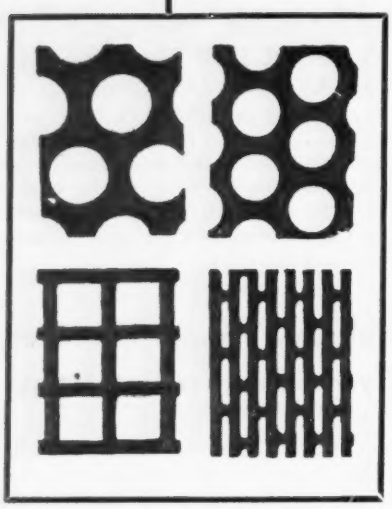
## Quicksilver Irregular

**New York** — Quicksilver prices vary widely in the absence of much business. Small lots of spot are $83 to $85 a flask.

## Prices of the Week, Cents a Pound

| | Copper: Electro delivered | Copper: Lake delivered | Copper: Casting refinery | Straits Tin: New York Spot | Straits Tin: New York Futures | Lead N. Y. | Lead St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| August 12 | 7.50 | 7.87½ | 7.25 | 26.00 | 26.37½ | 4.40 | 4.22½ | 3.82½ | 22.90 | 6.62½ | 35.00 |
| August 13 | 7.50 | 7.87½ | 7.25 | 26.30 | 26.70 | 4.40 | 4.22½ | 3.82½ | 22.90 | 6.62½ | 35.00 |
| August 14 | 7.50 | 7.87½ | 7.25 | 26.20 | 26.60 | 4.40 | 4.22½ | 3.82½ | 22.90 | 6.62½ | 35.00 |
| August 15 | 7.50 | 7.87½ | 7.25 | 26.12½ | 26.50 | 4.40 | 4.22½ | 3.82½ | 22.90 | 6.62½ | 35.00 |
| August 17 | 7.50 | 7.87½ | 7.25 | 26.00 | 26.37½ | 4.40 | 4.22½ | 3.80 | 22.90 | 6.62½ | 35.00 |
| August 18 | 7.50 | 7.87½ | 7.25 | 25.75 | 26.12½ | 4.40 | 4.22½ | 3.80 | 22.90 | 6.62½ | 35.00 |

# Perforated Metal Screens



An entire plant devoted to the manufacture of Perforated Metal and other sheet material

For

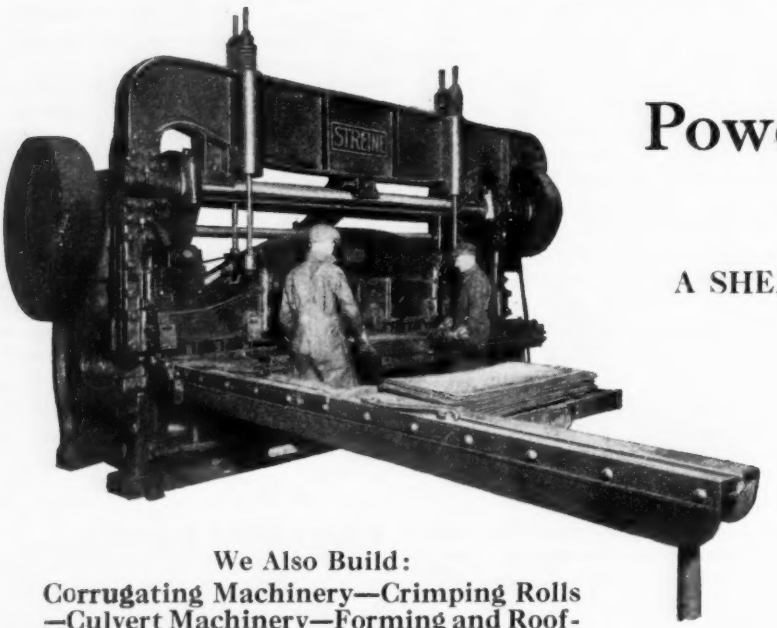
Grain Separating and Grading
Coal Screening and Washing
Ore Sizing and Screening
Pulp and Paper Mills
Sugar Refining

Machine and Belt Guards
Grilles and Ventilators
Drying Floors
Wells

*All Sizes and Shapes of Perforations for Every Purpose*

## THE HARRINGTON & KING PERFORATING CO.

5634 FILLMORE STREET, CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY STREET




# Streine Power Sheet and Plate Machinery

A SHEAR FOR EVERY REQUIREMENT

Sheet Shears — Strip Shears
Plate Shears — Factory Shears
Mill Shears
Rotary Gang Slitters
Continuous Shears

▼

WE BUILD THE BETTER GRADE OF SHEARS
All Lengths — All Capacities

We Also Build:
Corrugating Machinery—Crimping Rolls —Culvert Machinery—Forming and Roofing Presses—Conductor Pipe Machinery Sheet Oiling Rolls

## The Streine Tool & Manufacturing Co.
## New Bremen, Ohio

# Europe

**British Production Continues Downward — European Prices Easier—Exports Inactive**

**London**—(*By Cable*)—Steel markets continue quiet. In Great Britain not all the steel plants that were operating before the August holidays have resumed, owing to lack of orders. Demand for structural steel is fair. Contracts for three vessels have helped business on the Clyde and at Middlesbrough.

STEEL'S correspondent at Paris reports the semifinished steel comptoir has reduced billet prices to 420 francs ($16.50). Export trade is inactive. The correspondent at Brussels states steelmakers in Belgium find business conditions unsatisfactory, prices weakening, and France and Germany competing sharply. The report from Berlin indicates low offers are being made for export orders, for example, £5 16s 9d ($28.40) for ship plates for delivery to Britain. Poland has received some Russian railroad orders.

The daily rate of pig iron production in Great Britain in July was 10,226 tons, compared with 10,793 tons in June and 11,179 tons in May. Total output for July was 317,000 tons. At the close of the month 70 stacks were in operation, a loss of six.

Output of steel ingots and castings on a 31-day basis in July was 13,829 tons, compared with a daily average of 14,296 tons in June and 14,035 tons in May. Total production in the month was 428,700 tons.

## British Steel Wages Down; Pig Iron Prices Reaffirmed

**Birmingham, Eng.**—The Central Pig Iron Producers association has confirmed prices for another month, thus continuing its policy for obtaining as much business as possible without cutting prices. This only applies to specified zones for outside of these the association has no control over prices. Under this advantage Midland furnaces have sold considerable tonnage to South Wales, the Northeast coast and Scotland. Reports from Middlesbrough indicate little new business.

The bimonthly ascertainment of the Midland iron and steel wages board shows that selling prices in May and June were the lowest for two and one-half years, and about one-third below the corresponding months of last year. There was a fall in the price of marked bars of 10s ($2.42) a ton, to £12 ($58.20) a ton. Other brands of finished iron and steel have weakened and the result is that wages of ironworkers which are based on selling prices were dropped 2½ per cent Aug. 3.

Twenty-two furnaces are producing pig iron on the Northeast coast and of these seven are making Middlesbrough iron; seven hematite; and eight other kinds. Even this restricted output is too much for the needs of home and export consumers. Continental iron is too cheap to expect any business from France and Belgium, except where there is a special class of Middlesbrough material which the Continental user cannot get in his own country.

Demand for finished steel is stagnant in every market. In the north of England mills are suffering from the severe depression at the shipyards on the Northeast coast and the Clyde. Structural steel is in moderate demand in the North but it is in direct competition with Continental material in the South where the rebate plan has not been taken up to anything like the extent to which it has in the Midlands.

Structural yards in Birmingham and the Black Country have been able to keep their men employed by sacrificing profits on practically every contract taken. Orders amount to no more than a few hundred tons and these have been of little use to the heavy steelworks beyond finding them work for two or three days in the week.

In Scotland resumption of work has been general after the Glasgow fair holiday. One sheetmaker operated throughout the fair period and is stated to have five weeks' work on hand. This is an exceptional case, however, as most of the makers were in no hurry to resume. There were five blast furnaces damped down prior to the holiday, and now only one furnace is producing iron in Scotland.

## Current Iron and Steel Prices of Europe

| Dollars at Rates of Exchange, Aug. 17 | *British* Gross Tons U. K. Ports | | *French* Metric Tons Channel Ports | | *Belgium and Luxemburg* Metric Tons Channel Ports | | *German* Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f.o.b. Ship at Port of Dispatch—By Cable** | | | | | | | | |
| **PIG IRON** | | £ s d | | £ s d | | £ s d | | £ s d |
| Foundry No. 3**..... | $14.22 | 2 18 6 | $11.79 | 2 8 6 | $11.79 | 2 8 6 | $11.85 | 2 8 9 |
| Basic-bessemer..... | 14.58 | 3 0 0 | 11.18 | 2 6 0 | 11.18 | 2 6 0 | 13.37 | 2 15 0 |
| Hematite, Phos. .02-.05 | 14.94 | 3 1 6 | ..... | ..... | ..... | ..... | 17.01 | 3 10 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets..... | $25.52 | 5 5 0 | $15.19 | 3 2 6 | $15.19 | 3 2 6 | $15.55 | 3 4 0 |
| Wire rods..... | 41.31 | 8 10 0 | 25.51 | 5 5 0 | 25.51 | 5 5 0 | 25.51 | 5 5 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails..... | $40.10 | 8 5 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 |
| Merchant bars..... | 1.52c | 7 0 0 | .74c | 3 7 0 | .74c | 3 7 0 | .78c | 3 11 0 |
| Structural shapes..... | 1.68c | 7 15 0 | .72c | 3 5 0 | .72c | 3 5 0 | .73c | 3 6 0 |
| Plates..... | 1.79c | 8 5 0 | .88c | 4 0 0 | .88c | 4 0 0 | .90c | 4 2 0 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 1.76c | 8 0 0 | 1.76c | 8 0 0 | 1.64c | 7 10 0 |
| Sheets, gal., 24 ga. corr. | 2.03c | 9 7 6 | 2.20c | 10 0 0 | 2.20c | 10 0 0 | 2.31c | 10 10 0 |
| Bands and strips..... | 2.06c | 9 10 0 | .92c | 4 3 9 | .92c | 4 3 9 | .94c | 4 5 0 |
| Plain wire, base..... | 2.06c | 9 10 0 | 1.11c | 5 1 3 | 1.11c | 5 1 3 | 1.11c | 5 1 3 |
| Galvanized wire, base.. | 2.39c | 11 0 0 | 1.36c | 6 3 9 | 1.36c | 6 3 9 | 1.38c | 6 5 0 |
| Wire nails, base..... | 2.39c | 11 0 0 | 1.13c | 5 2 6 | 1.13c | 5 2 6 | 1.13c | 5 2 6 |
| Tin plate, box 108 lb... | $ 3.28 | 0 13 6 | ..... | ..... | ..... | ..... | $ 8.25 | 1 14 0 |

**Domestic Prices at Works or Furnace—Last Reported**

| | | | French Francs | | Belgian Francs | | Renten Marks | |
|---|---|---|---|---|---|---|---|---|
| Fdy. No. 3 Pig Iron** | $14.22 | 2 18 6 | $11.76 | 300(2) | $12.79 | 460 | $17.94 | 78 |
| Basic pig iron..... | 14.58 | 3 0 0 | 12.74 | 325(1) | 11.54 | 415 | 19.67 | 35.50 |
| Furnace Coke..... | 2.67 | 0 11 0 | 5.68 | 145 | 5.14 | 185 | 4.92 | 21.40 |
| Billets..... | 25.52 | 5 5 0 | 19.21 | 490 | 18.07 | 650 | 25.41 | 110.50 |
| Standard rails..... | 1.79c | 8 5 0 | 1.41c | 785 | 1.57c | 1,210 | 1.32c | 127 |
| Merchant bars..... | 1.63c | 7 10 0 | .90c | 500 | .82c | 630 | 1.31c | 126 |
| Shapes..... | 1.90c | 8 15 0 | .99c | 550 | .81c | 620 | 1.30c | 125 |
| Plates..... | 1.95c | 9 0 0 | 1.26c | 700 | .95c | 730 | 1.53c | 147 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 2.19c | 1,215 | 1.82c | 1,400 | 1.22c | 117 |
| Sheets, gal. 24 ga., corr. | 2.06c | 9 10 0 | 2.39c | 1,325 | 1.47c | 1,900 | 3.43c | 330 |
| Plain wire..... | 2.06c | 9 10 0 | 1.80c | 1,000 | 2.08c | 1,600 | 2.15c | 207 |
| Bands and strips..... | 2.06c | 9 10 0 | 1.01c | 590 | .78c | 600 | 1.54c | 148 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 11s 0d ($2.67) f. o. b. Ferromanganese £17 9s 6d ($84.93) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

# Machinery

REVOLUTIONARY changes in marketing methods on the part of leading machine tool builders are arousing widespread interest throughout the industry, but no opinion as to the eventual major trend in this respect can as yet be formed. The only conclusion which can be drawn is that revolutionary enginering developments are shaking the machine tool industry to the core. A wave of revival in inquiry has been moving from east to west, but has brought no corresponding revival in orders. Some substantial business has, however, come out of Detroit as a result of important model changes in the automotive industry.

**New York**—Machine tool sellers here are centering interest on the board of transportation list for its 207th street shops, bids to be opened Aug. 21. As previously noted, the list includes approximately 20 metalworking machines. Other equipment includes 15 to 20 woodworking machines and eight jib hoists, of 1, 2 and 3-ton capacity. Seven of the latter will be operated by air and one by hand.

These repair shops are being planned in connection with the new Eighth avenue subway. This was mentioned last week on this page as a possibility, but action has followed sooner than generally was expected.

One of the largest electric overhead crane orders in some time has been placed by the Palmer Steel Co., Springfield, Mass., in connection with an addition to its structural shop. The list comprises eight cranes, seven of 10-ton capacity each and one of 15-ton capacity. Spans range from 72 to 90 feet. The order is reported to have been placed with an eastern builder. Other equipment is to be purchased later, in all probability.

In general, machine tool demand can be described as "spotty," although the trend both in orders and in inquiry has changed slightly for the better. Hopeful news comes from automotive centers.

**Worcester, Mass.**—Chevrolet and Ford both were in the market this week with substantial machine tool orders. The former placed contracts mentioned last week as pending, mostly for stock machinery. Ford's purchases were generally described as being for use on Lincoln production. One item was a special large grinder costing more than $10,000.

Norton Co. closed this week on an order for an automobile parts grinder for Russia. Amtorg also is inquiring for lathes. Otherwise the market is dull. The government has placed in Worcester three lathes for the Mare Island navy yard and two lathes for the Puget Sound yard. The large contract covering machine tools for Brooklyn yard is pending.

Domestic inquiry is showing signs of increasing activity, this being true particularly of that coming from the Middle West and covering grinders.

**Pittsburgh**—Activity in the machine tool market shows a slight improvement in some directions although incoming business so far is little changed from the poor volume of July. Several tools are pending and early closing is expected.

Inquiry and orders are made up mostly of special equipment, the market for incoming tools such as planers, drills and shapers continuing quiet inasmuch as little replacement work is being done. Westinghouse Electric & Mfg. Co. has some inquiries pending but action is deferred. Railroads are not buying.

**Cleveland**—Aside from some scattering orders for machines and accessory equipment, developing to a considerable extent from retooling of automobile plants in the Detroit district, the machine tool market continues at a low ebb. Fair volume of inquiry is maintained, however, this activity to a noticeable degree having started at eastern sources, and then spread toward the west.

Reorganization of machine tool sales and service methods is the live topic of the week, due to major changes inaugurated in this and adjoining territories by two of the leading builders. One of these, which formerly covered this territory through a well known dealer, now has turned to direct factory representation. The other turns from direct factory representation to a combination of direct and dealer representation.

Revolutionary changes in merchandising are a logical outgrowth of the revolutionary engineering developments which are sweeping through the entire machine tool industry. With sentiment apparently divided between direct and dealer representation, interest in this important phase of the changing machine tool picture naturally runs high.

**Chicago**—Machine tool inquiries again have slackened. Figures asked recently by several prospective buyers have failed thus far to result in any definite proposals. Potential inquiries for about 30 small presses from a number of buyers are noted.

A brighter side of the situation is that tool and die shops see slightly better prospects ahead, and used tool demand remains fairly active. It is reported that the University of Chicago may be in the market for several additional items.

## Kearney & Trecker Adopts Unique Marketing Plan

Kearney & Trecker Corp., Milwaukee, which has just brought out a complete new line of plain, universal and manufacturing milling machines, announces a new plan of machine tool marketing involving a combination of direct sales organizations and dealers. In Cleveland and Detroit the Motch & Merryweather Machinery Co., with offices both in Cleveland and in Detroit, will be the dealer representative. In Chicago Marshall & Huschart Machinery Co. has been appointed dealer representative.

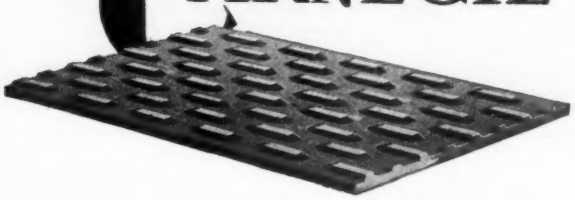
The entire present personnel of district managers, salesmen and service men will be retained by the Kearney & Trecker Corp. and for the present at least will continue their sales offices in the three districts mentioned. While these direct factory representatives will not give up direct sales, they will at the same time co-operate closely with the allied dealer organizations. These dealers will handle only the Kearney & Trecker line of milling machines.

According to the Kearney & Trecker Corp., such a co-operative plan never before has been attempted on a large scale. It is undertaken in order to render to milling machine users in these important territories a broadened service, both on sales and engineering, commensurate with recent advances in the art of milling.

## Hoist Business Declines

New York—A decrease in July business is reported by members of the Electric Hoist manufacturers' association in a statement just issued. The number of hoists ordered during the month declined 10.194 per cent and the value of such orders 20.421 per cent. Shipments were 16.925 per cent greater in July than in the preceding month.

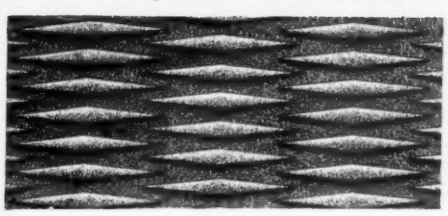
# CARNEGIE FLOOR PLATE



Section M-41
Thickness—$\frac{3}{16}$" to $\frac{3}{4}$" exclusive of raised figure.
Width —6" to 66".
Weight —8.8 to 31.7 pounds per square foot.
Recommended for floors, sidewalk openings, stair and traffic treads, where a safe, secure foothold is required. This design drains and cleans easily.

CARNEGIE STEEL COMPANY
*Subsidiary of* UNITED STATES STEEL CORPORATION
CARNEGIE BUILDING, PITTSBURGH, PA.

**The Perfect Diamond**



Diamond Pattern

## OVERCOMING
## *the "human element"*

NEVERSLIP

NOTE: We make two patterns of NEVERSLIP—*The Perfect Diamond* and *The Ribbed*. NEVERSLIP floor plates were evolved by us over 30 years ago.

Whenever you can substitute mechanical accident protection for intelligent alertness you are overcoming the "human element" in the interest of greater safety . . .

A NEVERSLIP floor plate surface underfoot reduces the "human element" enormously. NEVERSLIP plates are rolled of fine open hearth steel giving great structural strength and long wear. NEVERSLIP plates are made by pioneers in the floor plate field—and the "PERFECT DIAMOND PATTERN" has never been improved upon. *Send for samples and the latest Bulletins.*

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Remove the "slipping" hazard from YOUR Stairways by installing Central Stair Treads and Floors.

Their exclusive design has exceptional non-skid qualities, and they cannot be surpassed for durability. They are rust-resisting, self draining, and very easily installed.

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# INGOT-MOULDS

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***"The Largest Manufacturers of Ingot Moulds in the World"***

# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

BOSTON—D. Macauley, 436 Atlantic avenue, has let contract for erection of a machine and blacksmith shop, to cost approximately $40,000.

BOSTON — Massachusetts national guard will build an air corps building on Porter street in East Boston. Structure will be 180 x 200 feet and will include engine shops. C. F. Springall, 50 Park street, Malden, Mass., is architect.

PORTSMOUTH, N. H. — Bureau of supplies and accounts, navy department, Washington, will receive bids Sept. 8 for motors, ventilating sets, spare parts and other equipment for submarine maintenance.

## New York

BROOKLYN—Landow Metal Products Corp. has been incorporated with 100 common shares by M. E. Schettman, 8 West Fortieth street, New York.

NEW YORK—City board of education has plans for erection of a vocational school on Staten island. Cost is estimated at $1,000,000.

NEW YORK—Quick Change-Maker Corp. has been incorporated with $30,000 and 500 common shares by Murphy, Makepeace & Paley, 27 William street, to make money-changing devices.

NEW YORK—Aircraft Hardware Mfg. Co. Inc., 1391 Lafayette avenue, whose incorporation recently was noted, advises through W. T. Boyer that the company will manufacture hardware and screw machine products for the aircraft industry. Plant has been leased at the above address and plans are being formulated for equipping it with the necessary machine tools. (Noted Aug. 6.)

## New Jersey

BORDENTOWN — Airway Express Corp. of America will erect a hangar unit, 100 x 100 feet. Cost is estimated at $60,000. L. S. Kaplin, 33 West State street, Trenton, N. J., is engineer.

ORANGE—Municipal council proposes to extend the light and power plant and make improvements in the municipal waterworks station.

WOODBRIDGE — Municipal council has plans for participation in establishment of a sewage disposal plant, in cooperation with Rahway, Westfield, Crawford, Springfield, Kenilworth, Roselle Park, Clark township and Garwood. Cost is estimated at $375,000 with equipment, which will include pumping machinery. Clyde W. Potts, 30 Church street, New York, is engineer.

## Pennsylvania

MIFFLIN — Pittsburgh Airways Inc., Arrott building, Pittsburgh, has private plans for a hangar at the municipal airport here. Estimated cost, $70,000. J. D. Condon is president.

PHILADELPHIA—Dodge Steel Co., State road and Hellerman street, has let contract for construction of a foundry unit.

## Ohio

CINCINNATI—Cincinnati Galvanizing Co., Chickering and Spring Grove avenues, has closed bids for construction of plant additions and alterations at 4800 Spring Grove avenue. Plans are private.

CLEVELAND—Power house will be erected by Hughes Provision Co., 3199 West Sixty-fifth street. H. M. Morse & Co., 750 Prospect avenue, are engineers. Estimated cost, $50,000.

EATON—City, A. L. Reed engineer, will improve the municipal light and water plant. Project consists of erection of an addition, 40 x 44 feet, installation of generating equipment, pumping units and auxiliary machinery. Equipment will include two 300-horsepower boilers, bunkers, conveyors, 200 kilowatt and 500 kilowatt generators, condensers and water heater. Diesel engine may be used. Bond issue is pending.

FINDLAY—City, A. Gohlke engineer, will erect two sewage treatment structures in connection with improvements. Units will be 40 x 80 and 24 x 36 feet. Plans are being completed. H. P. Jones Co., Second National Bank building, Toledo, O., is engineer. Cost is estimated at $40,000.

GALION—Gledhill Road Machinery Co., care of E. C. Gledhill and W. V. Goshorn, is taking bids for erection of a plant on South State road and Harding way. Building will be 20 x 90 feet. Cost is estimated at $30,000. Wallace H. Hatch, Hippodrome annex, Cleveland, is architect.

HAMILTON—City council has started preliminary work for the construction of a municipal substation to be located at Fifth street and Maple avenue.

NORWALK—City, G. E. Scott engineer, is having plans prepared for erection of a sewage treatment plant, to cost approximately $350,000. H. P. Jones Co., Second National Bank building, Toledo, O., is consulting engineer.

PAINESVILLE — Ford Motor Co., Fordson, Mich., will erect an assembly plant on the Grand river, near here, according to John Crawford, vice president. Site of 365 acres will be acquired. Plant will cost $7,000,000, produce 400 cars per day and employ about 2500.

TOLEDO—Buckeye Steel Products Co. has been incorporated with 250 no par shares by J. G. Gluck, 338 Spitzer building.

YOUNGSTOWN — Pennsylvania railroad, Broad street station, Philadelphia, is reported to plan future concentration of roundhouse and terminal facilities at Girard, near here. Project will involve expenditure of $1,000,000. Shop equipment at New Castle, Pa., and Alliance, O., may be moved here. Maturity is indefinite.

## Indiana

FT. WAYNE — Zollner Machine Works, 1720 West Superior street, Duluth, manufacturer of heavy duty aluminum alloy pistons, advises through Theodore Zollner concerning plant here that the piston division of the company is to be moved to Ft. Wayne and placed in a new building, 50 x 150 feet, to cost $25,000. Contract has been let to Buesching-Hagerman Co., Ft. Wayne. (Noted Aug. 13.)

INDIANAPOLIS—Air-Craft Corp. of America advises through Roy C. Fulcher that the company has established offices in the Majestic building, here, and will manufacture cabin monoplanes in a plant at Portland, Ind., formerly occupied by Bimel Wheel & Spoke Co. Orrin Welch is to be in charge of production. (Noted July 30.)

## Michigan

DETROIT — Tool Shop Hardware Co., 463 Michigan avenue, will rebuild its plant, recently damaged by fire with loss estimated at $50,000.

DETROIT—Dirkes Industries Inc., 1644 West Fort street, has been incorporated with 200 no par shares by Carl E. Dirkes, to manufacture, install and repair lubrication machinery.

DETROIT—Wolverine Sheet Metal & Ventilating Corp., 6501 Mack avenue, has been incorporated with 5000 no par shares by Frank Seymour, 14216 Kentucky avenue, to deal in sheet metal and ventilating work. Bartley Turner and A. F. Skibbs are interested.

EAST LANSING—Michigan state college will build a 2-story addition to its engineering building. Bowd & Munson, Lansing, Mich., are architects. Estimated cost, $30,000.

## Illinois

CHICAGO—Plant on Southport avenue of the Teletype Corp., 1400 Wrightwood avenue, manufacturer of teletype machines, recently was damaged by fire.

CHICAGO — Commonwealth Edison

Co., 72 West Adams street, will build additional units on Western avenue. Permits have been granted for a 3-story plant, 72 x 188 feet, and a 9-story substation, 107 x 188 feet, to cost, respectively, $200,000 and $250,000. H. V. Von Holtz, 20 North Wacker drive, is architect and contract is held by George A. Fuller Co., 3212 Randolph street.

## Southern States

MOBILE, ALA.—United States engineer office will receive bids Aug. 31 for a diesel electric generating plant, direct connected.

WASHINGTON—Supervising architect, treasury department, will receive bids Aug. 25 for a synchronous motor generator set.

WASHINGTON—Joseph Smith, 3619 Benning road northwest, is reported to be in the market for a 10 or 15-ton crawler type crane, with 50-foot boom.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Aug. 25 on schedule 6377 for five motor generator sets.

FT. PIERCE, FLA.—Atlantic Battery Mfg. Co. Inc. will establish production of storage batteries for use in automobiles and motorboats. By-product will be lead sinkers. H. F. Stanton is general manager.

TAMPA, FLA.—Sunnyland Specialty Corp., 217 Franklin street, is in the market for a small power punch press and a manual punch press.

LAKE CHARLES, LA. — Funderburg Mfg. Co., whose incorporation recently was noted, advises that the company will maintain only a small shop for perfection of models, manufacture of parts for electrical signal devices to be done under contract arrangements. (Noted Aug. 6.)

SHREVEPORT, LA.—Moran Tank Works, Ricou-Brewster building, has plans for enlargement of its plant at Arkansas and Ricou streets.

ST. BERNARD, LA.—Police jury, Bernard parish, is receiving bids for equipment, to include two 40,000-gallon pumps. L. H. Folse, 804 Union street, New Orleans, is engineer.

BALTIMORE—Baltimore Ship Repair Co., H. J. Moylan secretary, 821 Key highway, plans erection of a machine shop, 30 x 70 feet. Cost is estimated at $30,000.

BALTIMORE—Recording Scales Co. has been organized with $100,000 capital by Richard B. Tippett Jr., Fidelity building, to produce a device for automatically recording overweight and underweight.

BEDFORD, VA. — Fitch-Carper Co. Inc. has been incorporated with $25,000 capital by John J. Fitch, Buchanan, Va., to make automatic drink vending machines.

FAIRMONT, W. VA.—City council is considering purchase of pumps and equipment in connection with waterworks improvements, to cost $15,000.

## Missouri

HUNTSVILLE — Municipal council will improve the city waterworks and purchase pumping machinery and auxiliary equipment. E. T. Archer & Co., New England building, Kansas City, Mo., are engineers. Estimated cost, $25,000.

ST. LOUIS—Semi-Steel Casting Co., Harry P. Hubbell president, 109 East Quincy street, plans expansion of facilities following a recent increase of capital from $50,000 to $80,000.

ST. LOUIS—Laclede Power & Light Co., subsidiary of Laclede Gas Light Co., 1017 Olive street, will install a 5000-kilowatt steam turbine generating unit at its Catalan avenue plant. Another unit will be moved from the Mound street station.

ST. LOUIS—American Zero Plate Co., whose incorporation recently was noted, will produce refrigeration units for commercial purposes. Units now are made at Dallas, Tex., but plant probably will be moved to St. Louis. (Noted July 23.)

## Arkansas

FT. SMITH—Solid Steel Scissors Co., H. J. Miller president, 2315 North Fifteenth street, is considering reconstruction of its plant, recently damaged by fire.

## Oklahoma

CUSHING — Empire Steel Corp., John A. Logan manager, has leased plant space here for a cold-rolling mill for the manufacture of culverts and heavy sheet metal specialties.

HEAVENER—City council proposes to build a waterworks plant and purchase equipment. V. V. Long & Co., Colcord building, Oklahoma City, Okla., are engineers. Approximate cost, $75,000.

OKLAHOMA CITY—Air Wash Co. has been established with plant at Second street and Lee avenue, for the manufacture of a device for washing clothes and dishes. C. E. Haggerty is interested. Production will be about 5000 machines per month.

PAWHUSKA—Municipal council will install a new engine unit and auxiliary equipment in the municipal light plant. Estimated cost, $45,000.

## Texas

DALLAS—City, E. Goforth clerk, proposes to build a sewage disposal plant. Plans call for a pump and blower station, 44 x 74 feet, a pumping station, 20 x 20 feet, and installation of six air compressors. Hawley, Freese & Nichols, Capps building, Ft. Worth, Tex., are engineers. Total cost is estimated at $1,700,000.

WACO—Evans-Strickland Machinery Co., 13A Hackberry street, recently incorporated, advises that it will manufacture a cotton burr extractor and has leased a shop. George E. Evans is general manager. (Noted July 23.)

## Wisconsin

GREEN BAY — Northern Metal Roofing Co. has been incorporated with $15,000 capital to acquire the stock and equipment of the roofing and sheet metal contracting department of the Northern Corrugating Co. Plant space in the rear of the Corrugating company's building has been leased. Frank Hurckman is president.

KENOSHA—W. E. O'Brien, city manager, will receive bids until Aug. 27 for one motor-driven pump for 25-foot head and with capacity of 15,000,000 gallons per day, one motor-driven pump for 200-foot head and with same capacity, priming pump, control apparatus and other equipment.

MANITOWOC — Pneumatic Gas Stopper Co. has been organized with $25,000 capital to engage in the manufacture of a valve to stop leaks in gas lines. Edward Meyer, Manitowoc, and Victor Ankarlo, Milwaukee, are interested.

SUPERIOR—Great Lakes Coal & Dock Co., 228 Plymouth building, Minneapolis, has let contract for a dock here to Peppard & Fulton Co., 1507 Tower avenue, Superior. Estimated cost, $150,000.

## Pacific Coast

COMPTON, CALIF.—Merit Mfg. Co., 725 East Florence avenue, Los Angeles, manufacturer of water heaters, plans to build a plant here, to be located at Alameda and Oakes streets. Estimated cost, $10,000.

HILMAR, CALIF.—Turlock irrigation district, A. M. Sorenson secretary, Turlock, Calif., has private plans for the erection of a substation here.

MODESTO, CALIF.—City council is considering the proposal to establish a corporation yard and erect a machine shop. Frank J. Rossi is city engineer.

OAKLAND, CALIF. — Hartmann Mfg. Co., 1460 Havenscourt, has been established by A. H. Hartmann for the manufacture of washing machines, tools, dies, jigs and parts.

SAN FRANCISCO—City and county of San Francisco has let contract to Clinton-Stephenson Co., Monadnock building, for alterations to hangar at the municipal field, including three repair shops.

BEND, OREG.—Great Northern railway, J. R. W. Davis chief engineer, St. Paul, plans to establish a terminal here with shops. Expenditures being considered will amount to $175,000.

SEATTLE—Plant of the Diesel Service & Engineering Co., 1200 Harbor avenue southwest, recently was damaged by fire. Loss is estimated at $12,000.

SEATTLE—Pacific Hoist & Derrick Co., 818 First street south, has awarded a contract to General Construction Co., Colman building, for a machinery mart and warehouse, 80 x 200 feet, with craneway. Approximate cost, $60,000.

SPOKANE, WASH.—Roc-Air Jack

Corp. has been incorporated with $25,000 capital by J. E. Bakken, Mohawk building, to operate a business as toolmakers, founders and welders.

YAKIMA, WASH.—Bureau of reclamation, Denver, will open bids Sept. 11 for one 4200-horsepower vertical hydraulic turbine, generators, motors and other equipment for a power plant at Prosser, Wash., and a pumping plant at Kennewick, Wash.

## Dominion of Canada

CALGARY, ALTA.—Municipal council will receive plans for the final unit of the city reservoir system, bids to be called by Gore, Nasmith & Storrie, architects, Confederated Life building, Toronto, Ont. A filtration plant and equipment are included, at a cost of $100,000.

NEW WESTMINSTER, B. C.—Warehouse and shop of the city waterworks department recently were damaged by fire. Harry Stewardson is city engineer.

VANCOUVER, B. C.—British Columbia Electric Railway Co. Ltd., Carrall and Hastings streets, will start erection of an $850,000 gas plant with daily capacity of 25,000,000 cubic feet. Contract has been let to Gas Chamber & Coke Ovens Ltd., London, Eng., and bids for coal handling equipment, condensers, etc., will be called soon. J. Keillor is engineer.

HAMILTON, ONT.—Canadian National Railways, C. S. Gzowski chief construction engineer, Montreal, Que., will build machine shops here to replace units damaged by fire. Estimated cost, $100,000.

ORILLIA, ONT.—Orillia water, light and power commission is in the market for deep well pumps for the supply of 2,000,000 gallons per day. R. H. Starr, West street, is engineer.

ST. THOMAS, ONT.—Canada Vitrified Clay Products Ltd. is establishing a plant here and will construct a unit to cost $140,000.

TORONTO, ONT. — Maytag Co., Newton, Iowa, advises through R. A. Bradt, vice president, that report is true that the company plans to establish a branch in Canada, but for the time being it will be only for assembly of parts. Company probably will have an assembly plant at Winnipeg, Man., and a branch plant at Toronto, Ont., but detailed plans are not complete as yet. (Noted Aug. 13.)

WIARTON, ONT.—G. W. Taylor, municipal clerk, is receiving bids for installation of pumps in the municipal waterworks plant.

REGINA, SASK.—D. A. R. McCannel, city engineer, is in charge of construction and equipment of a new sewage disposal unit, to cost $130,000. R. J. Westgate is city commissioner.

# New Trade Publications

FURNACES—Electric Furnace Co., Salem, O., has issued a folder illustrating and listing several electric and fuel-fired furnaces of various types recently installed in steel plants.

TRUCK WHEELS—A folder by Divine Bros. Co., Utica, N. Y., describes canvas cushion truck wheels made by the company. An illustration shows the construction.

HIGH TEMPERATURE MORTARS—A booklet by the General Refractories Co., 106 South Sixteenth street, Philadelphia, covers its high temperature mortars and plastic chrome ore.

SAND TESTER—A motor pulling device for testing the bonding or cohesiveness of molding sand is illustrated and described in a recent bulletin from Reynolds Electric Co., 2650 West Congress street, Chicago.

PATCH MATERIAL—Smooth-On Mfg. Co., 570 Communipaw avenue, Jersey City, N. J., has issued a pamphlet giving information on various uses of its products for joints, to stop leaks and in automobile and truck repairs.

OXYGEN—Gas Industries Co., Franklin Savings & Trust Co., Pittsburgh, has issued a broadside suggesting use of its equipment for production of oxygen for industrial use, in small or large quantities. Various sizes of plants are illustrated.

TOOL ROOM MACHINE—Keller Mechanical Engineering Corp., 70 Washington street, Brooklyn, N. Y., has issued a bulletin on its new automatic tool room machine in two types. Forms of work to which it is adapted are illustrated and economies stated.

SAND PREPARATION—Sand rubbing machines of the Universal System of Machine Moulding & Machinery Co. Ltd., London, Eng., are described in a recent illustrated bulletin. Technical details of operation are described and production advantages emphasized.

GYRATING SCREENS—An illustrated catalog by Robins Conveying Belt Co., 15 Park Row, New York, describes various models of gyrating screens. Details of design and operation are outlined, engineering specifications are given, and illustrations show typical applications.

SPIRAL WELDED PIPE—American Rolling Mill Co., Middletown, O., in a current bulletin presents data for engineers in designing pipe lines for pressure. It includes a chart showing the relation between pressure, diameter and wall thickness of pipe, founded on the Barlow formula.

COAL PULVERIZERS—Grindle Fuel Equipment Co., subsidiary of the Whiting Corp., Harvey, Ill., has issued bulletin No. 12, devoted to its table roller pulverizer for grinding various materials. A sectional view shows construction and operation and various advantages are suggested. Illustrations show installations.

NICKEL ALLOY STEEL—International Nickel Co. Inc., New York, has issued numbers 1 to 8 of its recommended specifications for nickel alloy steel in railroad applications, covering forging billets, normalized and tempered low-carbon forgings, boiler and firebox plates, castings and other forms. The specifications are issued in standard form and others will be presented as occasion arises.

STEEL PILING—Steel piling is the subject of Bulletin B by the Jones & Laughlin Steel Corp., Pittsburgh. It is compiled for the use of engineers, giving data for the piling in its various sections, with weights and section moduli, data on circular construction and instructions for using the various sections in combination. Various projects in which this material has been used are illustrated.

STEEL SHEET PRODUCTS—A new edition of its booklet on Inland open-hearth sheet steel products has been prepared by Inland Steel Co., Chicago. It contains all the information, brought up to date, ordinarily needed for ordering steel sheets. It also includes standard extras and differentials, weights, bundling tables, standard commercial tolerances and trade customs and practices. A full list of Inland sheet steel products is also given.

ELECTRICAL EQUIPMENT—General Electric Co., Schenectady, N. Y., has issued a number of bulletins on various lines of its equipment, among them the following: Built-in speed reducer for general-purpose, ball-bearing induction motors; direct current motors; mechanical-drive turbines; brakes for direct-current motors; solenoid-operated valve current motors; solenoid - operated valves; pole-changing switches; combination magnetic switch; centrifugal air compressors; turbine generator sets; induction motors.

GOGGLE VALVES — William M. Bailey Co., Pittsburgh, has issued a new bulletin describing some of the important improvements made in its thermal expansion goggle valve for blast furnace and boiler plant gas mains. The flange now is a U-shaped annealed steel casting of ample strength to operate in the hottest gas main of any size. A secondary adjustment has been added to eliminate all lost motion after the valve has been adjusted and set. A new design of built-up plate which has machined seats on both sides to conform to the machined edges of the flanges has been incorporated to insure a gas-tight valve.